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ABSTRACT

"One Muslim is Enough!" Evidence from a Field Experiment in France*

Anti-Muslim prejudice is widespread in Western countries. Yet, Muslims are expected to constitute a growing share of the total population in Western countries over the next decades. This paper predicts that this demographic trend will increase anti-Muslim prejudice. Relying on experimental games and a formal model, we show that the generosity of rooted French toward Muslims is significantly decreased with the increase of Muslims in their midst, and demonstrate that these results are driven by the activation of rooted French taste-based discrimination against Muslims when Muslim numbers increase. Our findings call for solutions to anti-Muslim prejudice in the West.

JEL Classification: A12, C90, D03, J15, J71, Z12

Keywords: discrimination, Islam, France, group salience, experimental economics, economic theory, group threat theory, intergroup contact theory

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When there's one [Muslim],
that's ok; it's when there's a lot
of them that there are problems.

Brice Hortefeux, Former French
Minister of Interior.[i]

1 Introduction

On January 20, 2011, Baroness Sayeed Warsi, the first Muslim woman to serve in the British cabinet, argued that prejudice against Muslims is seen by many people in the UK as normal and uncontroversial, and that "Islamophobia has now passed the dinner table test."[1] Distressingly, anti-Muslim prejudice is not specific to the UK. Despite their virtually complete secularization in the past century, European states, all of them with historic Christian majorities, are considered as having a special problem with Islam going back to the fall of Constantinople to the Ottomans and the reconquest of Spain in the 15th century. The post-WWII immigration wave that has laid the foundation for today's European Muslim population, has further exacerbated this prejudice. In recent years, a chain of international events has led to ever increasing attention to Islam and Muslims in public discussion not only in Europe, but also in the US.

The impact of September 11 seems decisive. In the US, Davila and Mora (2005) and Kaushal, Kaestner, and Reimers (2007) find that, subsequent to that attack, Middle Eastern Arabs (and Afghan, Iranian, and Pakistani men in particular) experienced a significant decline in earnings. To be sure, even before September 11, prejudice against Muslims was more widespread than prejudice against other immigrants in Western and Eastern Europe, as documented by Strabac and Listhaug (2008). However, Allen and Nielsen (2002), Fetzer

[i]This remark was uttered in French during a photo-op on September 5, 2009 at the UMP Summer School in Seignosse, in which the Minister was interacting with a young militant, Hamid. Brice Hortefeux joked before the statement in the epigraph that this militant, who was known to be Muslim, "does not correspond at all to the prototype" after having been told that the militant eats pork and drinks beer. The video of this interaction, procured by Le Monde, was uploaded at `http://www.dailymotion.com/video/xafz5w_le-derapage-de-brice-hortefeux-la-h`, and we downloaded it on September 24, 2010. Translated from the French by the authors.

[1]This remark was uttered at the University of Leicester. Excerpts from the speech are available at `http://www.bbc.co.uk/blogs/worldhaveyoursay/2011/01/has_prejudice_against_muslims.html`. We accessed this website on September 1, 2011.

and Soper (2003) and Sheridan and Gillet (2005) show that this hostility against Muslim communities increased in the aftermath of September 11 in a wide range of EU countries.

Despite this context of widespread anti-Muslim prejudice, Muslim populations are expected to constitute a growing share of the total population in Western countries over the next decades, through continued migration and higher-than-average fertility rates among Muslims. According to the Pew Research Center (2011), the Muslim share of the population in Europe as a whole is expected to grow by nearly one-third over the next 20 years, rising from 6% of the region's inhabitants in 2010 to 8% in 2030. In the US, also reported by Pew, the population projections show the number of Muslims more than doubling over the next two decades, leading the US to host a larger number of Muslims by 2030 than all European countries save for Russia and France. Given these demographic trends, how will anti-Muslim prejudice evolve? For instance, will rooted Westerners be more or less generous toward Muslims as Muslim numbers around them increase (what we call Muslim out-group salience)?

The objective of this paper is twofold. First, we want to understand how anti-Muslim prejudice in Western countries will evolve with Muslim out-group salience over the next decades. To do so, we rely on experimental games that we conducted in France in 2009. Our games bring together rooted French (the so-called "Français de souche" which we abbreviate as FdS hereafter)[2] and a set of immigrants.[3] These immigrants belong to two ethno-linguistic groups in Senegal, the Joolas and the Serers that are divided by religion, with one portion of them being Muslim and another portion being Christian. With the exception of religion, Senegalese Muslims (hereafter SM) and Senegalese Christians (hereafter SX) from these two ethno-linguistic groups are similar. They share the same culture and migrated to France in the same time period.[4] The goal of this experiment is to compare the effect of SM out-group salience on rooted French generosity toward SM with the effect of SX out-group salience on rooted French generosity toward SX. To achieve this goal, we organize a dictator game,[5]

[2]By rooted French or FdS, we refer to French citizens with four grandparents born inside metropolitan France. We identify this set in order to maximally differentiate French citizens with no immigrant background (FdS) from those of recent migration to France (SM and SX).

[3]In France, the term "immigrants" refers only to those permanently and legally residing in France who were born abroad. In this paper, we use the term much more broadly, viz., to refer to all residents in France who are immigrants from outside the EU, who moved to France after World War II, and their descendants.

[4]See Adida, Laitin and Valfort (2010) for full justification of this identification strategy.

[5]The dictator game was introduced by Kahneman, Knetsch and Thaler (1986). It is a two-person game in which player 1, called the "donor", has to decide what share $s \in [0, 1]$ of an amount of money normalized to 1 he gives to player 2, called the "recipient". For a given share s, the monetary payoff of player 1 and of player 2 is given by $x_1 = 1 - s$ and $x_2 = s$ respectively.

played communally, and vary exogenously the ethno-religious composition of the player-set across the game sessions by manipulating the number of SM and SX in each game session. We then compare the impact of increasing numbers of SM players on the amount given by rooted French donors to SM recipients, with the impact of increasing numbers of SX players on the amount given by rooted French donors to SX recipients. Our results reveal that FdS generosity toward SM is significantly decreased with SM out-group salience, in a way that is not matched by the impact of SX out-group salience on FdS generosity toward SX. We portray this result as the *Hortefeux effect* (see the epigraph) to the extent that the presence of one additional SM is enough to undermine FdS generosity toward SM recipients. Moreover, we find that FdS correctly believe that the impact of SM out-group salience on FdS generosity toward SM recipients is significantly more negative than the impact of SX out-group salience on FdS generosity toward SX recipients. This finding suggests that the appearance of FdS discriminatory behavior toward Muslims with increasing Muslim out-group salience is common knowledge among rooted French, such that Brice Hortefeux, the former French Minister of Interior, can refer to the negative consequences of Muslim out-group salience in an unguarded way.

What accounts for the decrease in FdS generosity toward Muslims following Muslim out-group salience? Understanding the mechanism underlying the Hortefeux effect constitutes the second objective of this paper.[6] To do so, we develop a rational model augmented with other-regarding preferences that experimental economists have shown to be key determinants of individual behavior.[7] This model offers two possible explanations for the Hortefeux effect. First, the decrease in FdS generosity toward Muslims when Muslim numbers increase may be a response to changes in the behavior of non-FdS when Muslim numbers increase. For instance, FdS can be less generous toward Muslims with Muslim out-group salience if, in that context, Muslims are more generous toward each other and/or if Muslims are less generous toward FdS. In the former case, FdS will free-ride on Muslims' in-group generosity. In the latter case, FdS will compensate members of their in-group for Muslims' lower generosity toward FdS, thereby lowering their generosity toward Muslims. Second, the decrease in

[6]Samuelson (2005) recommends exploiting experimental results in order to improve our understanding of the mechanisms underlying individuals' behavior, thereby allowing the development of theories yielding higher predictive power.

[7]In experimental economics, the dictator game provides compelling evidence for other-regarding preferences challenging the *homo oeconomicus* postulate, which predicts that the donor should not give anything of his initial endowment to the recipient. Indeed, Forsythe, Horowitz and Sefton (1994) show that 80% of their subjects choose to give a strictly positive share of their initial endowment, with 20% choosing to divide this endowment equally. Reviewing eleven results from dictator games, Camerer (2003) reveals the generality of this finding, as the mean offer ranges from 10% to 52%.

FdS generosity toward Muslims when Muslim numbers increase may result from changes in FdS preferences and notably from the activation of FdS taste-based discrimination against Muslims when FdS are surrounded by Muslims. In that context, the positive weight that FdS assign to the well-being of Muslims is a decreasing function of the relative size of the Muslim minority. Our results show that FdS are the only donors in the dictator game to change their donations when Muslim numbers increase. Notably, SM donors do not change their donations with Muslim out-group salience. This suggests that the Hortefeux effect derives from an activation of FdS distaste toward Muslims with Muslim out-group salience. This finding is in line with Schneider (2008) who shows, based on the European Social Survey, that the perception by Europeans of a symbolic, rather than actual threat, accounts for the increase in Europeans' anti-immigrant attitudes when the relative size of the immigrant community increases. These results have ominous societal implications and point to the urgency of finding solutions to taste-based discrimination against Muslims.

This paper contributes to two strands of the literature on discrimination. The first strand theorizes the mechanisms linking attitudes toward the out-group and out-group relative size. Two theories oppose each other. Intergroup contact theory predicts that an increase in the relative size of the minority provides contact opportunities with the minority, which in turn attenuate prejudice by the dominant group against members of the minority (Allport (1954)). Group threat theory predicts that an increase in the relative size of the minority generates hostile attitudes by the dominant group toward the minority, either because of increased competition over tangible scarce resources or because of the perception by the dominant group of a symbolic threat (which we call "distaste") to one's cultural integrity (Blalock (1967)). This paper allows us to test intergroup contact theory against group threat theory. By increasing the number of Muslims in the game sessions, we give an opportunity for both theories to shape individual behavior: an increase in the number of Muslims increases opportunities for interaction and contact; but it also introduces the prospect of a Muslim threat. If contact theory dominates, we should observe a decrease in FdS taste-based discrimination toward Muslims. If group threat theory dominates, we should observe an increase instead. Our findings show that the latter wins out: the behavior we observe toward the Muslim minority is consistent with group threat theory rather than intergroup contact theory. Moreover, this paper identifies the mechanism behind group threat theory: the perception by the dominant group of a symbolic threat, not actual threatening behavior by the minority, accounts for the hostile behavior by the dominant group against that minority.

The second strand puts these theoretical mechanisms to test. Several scholars have found this relationship to be statistically insignificant.[8] Yet, others identify a significant relationship that generally points to an increase in negative attitudes toward the out-group when the out-group becomes more salient.[9] Few studies have analyzed the relationship between Muslim out-group salience and anti-Muslim prejudice. Those that do also point to an increase in anti-Muslim prejudice in geographic areas where Muslim out-group size is higher. Bowyer (2009) shows that residential proximity in the UK to Pakistanis and Bangladeshis, who are primarily Muslim, is associated with more negative attitudes towards ethnic minorities. Similarly, relying on survey data, Savelkoul, Scheepers, Tolsma and Hagendoorn (2010) find that Muslim out-group size is related to anti-Muslim attitudes by rooted Dutch. We complement these approaches in a number of ways. By comparing changes in attitudes of Westerners toward Muslim immigrants when the relative size of the Muslim immigrant group increases, with changes in attitudes of Westerners toward a control group when the relative size of this control group increases (this control group differing only from Muslim immigrants with respect to religion), we isolate a Muslim effect from possible confounds such as race, ethnicity, or nationality. By relying on experimental games bringing together FdS, SM, and SX, we improve upon previous survey-based studies[10] with an analysis that looks directly at discriminatory behaviors. By exogenously varying the ethno-religious composition of the player-set across the game sessions, we overcome the simultaneity bias that typically[11] contaminates studies investigating the relationship between demographic context and attitudes toward migrants: racially intolerant individuals from the majority community are indeed unlikely to choose to live in areas with large ethnic minority populations.

The paper proceeds as follows. In Section 2, we introduce our experimental setup. In Section 3, we present our experimental results, including the Hortefeux effect. In Section 4, we develop a rational model augmented with other-regarding preferences to explain the behavior of FdS donors in the dictator game. We then run an empirical test showing that the Hortefeux effect derives from an activation of rooted French taste-based discrimination

[8]See Strabac and Listhaug (2008) for Europe; Hjerm (2007) for Sweden; Citrin and Sides (2008) for Europe and the US.

[9]See Scheepers, Gijsberts and Coenders (2002), Schneider (2008), Gorodzeisky and Semyonov (2009) for Europe; Dustmann and Preston (2001) for the UK; Krueger and Pischke (1997) for Germany; Schlueter, Schmidt and Wagner (2008) for Germany and Russia; Schlueter and Scheepers (2010) for the Netherlands; Taylor (1998) for the US.

[10]The previous studies are all based on self-reported attitudinal measures, with the exception of Krueger and Pischke (1997) who analyze the relationship between crime against foreigners and the relative number of foreigners.

[11]Dustmann and Preston (2001) and Hopkins (2010) are an exception.

against Muslims with Muslim out-group salience. Section 5 provides robustness checks. Section 6 summarizes our major conclusions and discusses their implications for the integration of Muslim immigrants into Western societies.

2 Experimental set up

In this section, we present our subject pool, our treatment (i.e.: the variation of the ethno-religious composition of the player-sets across the game sessions) and the dictator game that allows us to analyze the impact of Muslim out-group salience on rooted French generosity.[12]

2.1 The subject pool

In March 2009, we set up a series of experimental games between FdS, SM and SX. We recruited 27 Senegalese players: 16 self-identified as Muslims (SM) and 11 as Christians (SX).[13] We relied upon three separate networks to recruit these Senegalese players. Two of the networks came from the ethnographers who were conducting family histories for our wider research project, and were asked to recruit subjects by merely telling them they had heard about experiments with a chance to earn a lot of money. No mention was to be made about Senegalese specificity or religion. The third network came from a Senegalese night watchman (not from the Joola or Serer communities) who worked at a student dorm. He was given a quota for the SM and SX and paid for each recruit who showed up for inscription and participated in the games. Here again, no mention was to be made about Senegalese specificity or religion.

It is important to note that African Muslims are less spontaneously associated with Islam in the French collective imagination because they know little to no Arabic and interact indiscriminately with African Muslims and African non-Muslims (Diop (1988)). Any evidence of FdS discrimination against SM should thus be interpreted as a lower bound on the magnitude of FdS anti-Muslim discrimination: levels of discrimination against Maghrebis, the Muslims who are at the center of public debates about the role of Islam in France, would almost certainly be higher (had there been a way to identify a Muslim effect from a Maghrebi

[12]Full protocols (in French, but with English translations) are available upon request. Here we review only what is necessary for interpreting the results presented in the subsequent section. We take this opportunity to thank our six recruiters and monitors for their incredible hard work, intellectual contributions throughout, and dedication to the project: Mathieu Couttenier, Jacinto Cuvi Escobar, Karine Marazyan, Etienne Smith, Josselin Thuilliez and Severine Toussaert.

[13]Our subjects are coded by religious self-identification or ascribed religious heritage.

immigrant sample in France) than those we find for Senegalese Muslims.

To complement our game sessions, we also recruited 52 non Senegalese players. The ethno-religious breakdown of these 52 non-Senegalese players was as follows. First, 29 players, among whom 21 FdS, were of European background. We categorize all these 29 players as being of Judeo-Christian background. The 19 players who specified their religion confirmed that they were either Christian (18 players) or Jewish (1 player), while the others (who self-declared as "atheist" or who didn't specify a religious belonging) all had recognizable Judeo-Christian first names: Bertrand, Danièle, Fabien, Florence, Karl, Marine, Rénald, Sophie, Spyro, Yves. Second, 12 players were of African background. We categorize 6 of these 12 players as being of Judeo-Christian background. The 5 players among them who specified their religion confirmed that they were Christians, while the remaining player (who didn't specify a religious belonging) had a recognizable Judeo-Christian first name: Julie. We categorize the other 6 African players as being of Muslim background. The 4 players among them who specified their religion confirmed that they were Muslims. As for the 2 players who didn't specify a religious belonging, one of them was known by our ethnographers to stem from a Muslim family while the other had a recognizable Muslim (Arabic) name: Maïmouna. Finally, 12 players were of North African background. We categorize these 12 players as being of Muslim background too. The 9 players who specified their religion confirmed that they were Muslims, while all the others (who self-declared as "atheist" or who didn't specify a religious belonging) had recognizable Muslim (Arabic) first names: Jalal, Nabil, Reza.

We recruited these players using a stratified (by population density) but not always fully random recruitment procedure centered on the 21 metro stations in the ethnically diverse setting of the 19th district of Paris.[14] In a fully random protocol, we assigned a weight to each metro station based on the density of the area in which it is located, with the higher density stations getting more cards in our random draw. Each recruitment team drew a metro station for each recruitment day, and then a number from 1 to 10 to determine which passer-by to invite as a game recruit. But because we wanted to ensure a large number of interactions between our SX/SM sample and FdS, we deviated from this protocol to assure ourselves a sufficient number of FdS players. When potential subjects who looked as if they were FdS walked by, recruiters were instructed to ignore the sequence of selection, and to

[14]According to the 1999 French census, the percentage of individuals living in this district who are born in France is 63.5 (against 82.4 for all Paris). A good picture of the diversity in the 19th district is offered in the French film "Entre les murs" ("The Class" in its English-language version) that received the Palme d'Or at the 2008 Cannes Film Festival.

ask them to participate in our experiment. Passers-by who were willing to hear our appeal were told that they could win up to 148 euros for about two and a half hours of game participation,[15] games which were designed to investigate "how people from Ile-de-France [Parisian region] make decisions about money."

Turn-downs were about 30 percent, introducing some bias that likely leads to an over-representation of individuals favorable to diversity among our sample (relative to a random sample of game participants). Indeed, those individuals who agreed to participate in our experiments effectively agreed to be part of an experiment in which they would have to interact with ethnic and religious "others" from the ethnically diverse Ile-de-France region. We can test this intuition for FdS players. To do so, we compare the average political ideology of our FdS sample to that of a random sample of FdS from the 2009 European Social Survey ("ESS" henceforth). We use a question that measures where respondents stand on a left-wing/right-wing scale, capturing a tendency to support social change versus a tendency to preserve traditional values. One's position on a left wing-right wing scale therefore reveals, among other things, attitudes toward diversity. In order to obtain a comparable group of FdS respondents in our experiment and in the ESS, we selected a sub-sample of ESS respondents who were born in France and whose parents were both born in France. Unfortunately, the ESS does not provide information about the birthplace of the respondents' grandparents. We thus cannot exclude ESS respondents with one or more grandparents born abroad: our sample of FdS respondents from the ESS is thus, if anything, more open to diversity than would be a sample of FdS respondents with four grandparents born in metropolitan France (the definition of FdS for our experimental games). This bias thus runs against us finding any difference between our FdS players and the FdS respondents in the ESS, since we hypothesize that our FdS respondents are more open to diversity than a random sample of FdS. Table 1 presents the results of a difference of means analysis between our FdS and the ESS FdS. It shows that our FdS sample is, on average, more left-wing than the random sample of FdS respondents in the 2009 ESS (significant at the 99% confidence level). These results are confirmed by an OLS analysis reported in Table 2. In this table, the variable "European Social Survey" takes the value 1 if the individual is a respondent in the 2009 ESS and 0 if she is a participant in our 2009 experiment. The coefficient for this variable is always positive and highly significant, whether one controls for the gender (column 2), the age (column 3), the education (column 4) or the household income (column 5) of the individual. We therefore

[15]This stands for roughly 8.5 times the hourly minimum wage in France as of 2009.

have confirmation that FdS participants in our 2009 experiments are more open to diversity compared to a representative sample of FdS in France that same year. As a consequence, our results suffer from a bias that leads to an underestimation of anti-Muslim discrimination on the part of FdS.

2.2 The treatment

The experiment comprised two phases: a registration phase, during which we collected demographic and behavioral data that we later used for the composition of the player-sets; and a game phase, during which subjects played a series of experimental games. We supervised eight sessions of games held in a rented private language school in the 19th district in Paris, over the course of two weekends, on Friday evenings after work and on Sunday. For our experiments to be unbiased, we could not give players the impression that we wanted to know if they were conditioning their moves on the religious backgrounds of our Senegalese players, and therefore needed to conduct the experiments in a setting in which the Senegalese players would not appear to be exceptional. The 19th district, with its high levels of national, ethnic and religious diversity, offered a solution that worked: in the exit surveys for the experiments, not a single subject speculated that religion had anything to do with the purposes of the games,[16] and only one of the Senegalese players out of a total 27 verbally wondered if there was something odd about having other players in the room who were from his Senegalese language group.

Each session was comprised of ten players. Based on information learned at registration, subjects were assigned to a session so as to satisfy three criteria. First, in order to obtain statistical power, all sessions needed at least two FdS-SM and one FdS-SX interactions, or the reverse. Second, we needed to "treat" our game sessions properly, by varying their ethno-religious composition. This allows us to capture the effect of out-group salience, by comparing the change in FdS generosity toward SM when the number of SM increases, with the change in FdS generosity toward SX when the number of SX increases. Yet, to avoid collinearity between the salience of different out-groups, we assigned subjects to a session such that no significant correlation could be observed between the number of subjects of different ethno-religious types across the sessions. Table 3 specifies the ethno-religious composition of each session, by distinguishing between players of European and

[16] In the exit questionnaire, we asked: "Que pensez-vous que notre équipe aura appris sur vous à travers vos décisions aujourd'hui?" [What do you think our team will have learned about you from the decisions you made today?].

Judeo-Christian background, players of African and Judeo-Christian background, players of African and Muslim background, and players of North African and Muslim background. The number of SM varies from 1 (in sessions 1 and 7) to 3 (in sessions 5 and 8), while the number of SX varies from 1 (in sessions 1, 3, 4, 5, 7) to 2 (in sessions 2, 6 and 8).[17] Third, to test the effect of mixed gender versus non mixed gender sessions in a subsequent paper, we supervised three all male sessions, three all female sessions and two mixed gender sessions.

Despite these constraints, players were also assigned to game sessions according to their availability. One might therefore worry that players self-selected into sessions, and therefore into treatments, in a systematic manner that might bias our results. Yet none of our players were aware of the ethnic composition of the sessions when they made their choice. Still, we ensure that FdS participating in sessions with high numbers of SM (SX) do not differ from FdS participating in sessions with low numbers of SM (SX), by controlling in our regressions for the gender, age, education, household income and religiosity of FdS players, as well as for whether they know players who participated in previous game sessions. We face a similar concern with our Senegalese players: SM (SX) participating in sessions with high numbers of their in-group could differ from SM (SX) participating in sessions with low numbers of their in-group. Indeed, it might be that more religious SM (SX) are more available to play games on Sundays (Fridays) and we would therefore observe a higher number of religious SM (SX) on Sundays (Fridays). In other words, there is the possibility that the degree of religiosity of our Senegalese Muslim players is correlated with their probability of being available on Friday rather than Sunday (and conversely for our Senegalese Christian players). Due to low numbers, we cannot run a difference of means analysis between the degree of religiosity of SM (SX) in sessions where SM (SX) numbers are high and their degree of religiosity in sessions where their in-group salience is low. However, in our regressions, we are able to correct for such potential bias by controlling for the average level of religiosity of SM and SX players in the session. Our results are robust to the inclusion of such controls (see the robustness checks).

[17]The fact that the number of SM varies from 1 to 3, while the number of SX varies from 1 to 2, introduces a concern: could the Hortefeux effect derive from the fact that FdS exposure to SM out-group salience means an exposure to 3 Senegalese Muslims, while FdS exposure to SX out-group salience means an exposure to 2 Senegalese Christians? In our results section we address this concern and show that the Hortefeux effect is not driven by this asymmetry.

2.3 The dictator game

We answer our main research question on the impact of Muslim out-group salience on FdS generosity with data collected from our 2009 dictator game. When they arrived at a game session, subjects were given a code number. They were then asked to write their first names on a label and to paste that label on their chests. The only information players had about each other was their looks, their manners, their dress and their first names. None wore any clothes or jewelry revealing religious affiliation, with the exception of one non Senegalese player, who wore a headscarf signaling a Muslim identity.

The 2009 dictator game took place after the group of ten had played a series of simultaneous trust games; a speed-chatting game in which all players got to meet five other players in four-minute conversations, as in a speed-dating scenario; and a voting game in which each speed-chatting group elected, among the group of players they had just met, a leader who would then distribute funds to his/her electorate at his/her discretion.[18] Therefore, by the start of the dictator game, all ten players already knew a good deal of information about one another, especially due to the speed chatting game.[19] However, at no time did any of our players know the game decisions of any of the other players in their session.

Our experimental setup for the dictator game was the only one to bring together all players in a single room – hence guaranteeing the activation of group salience effects. All players (whom we refer to as donors) were shown the same set of six partners (whom we call recipients) on a large screen revealing only their faces and ascribed first names, which we strategically altered. More precisely, among the six recipients, two were apparent FdS with typical FdS names, two were ambiguous with alternatively Muslim and Christian names, such that donors could reasonably think they were FdS with Christian names or North Africans with Muslim names, and two were apparent black Africans. These last two, a Senegalese man and a Senegalese woman, were the recipients of interest for this analysis.

[18] We analyze these other games in separate papers.

[19] For the speed chatting game, our ten players were placed into two teams of 5, each following the same protocol. Each player on a team was instructed that he/she would have a few minutes to meet (and we emphasized, to get to know) each member of the other team, thereby "speed chatting" with five other players, sequentially, as in a speed-dating situation. After meeting each partner, players were given 1 minute to jot down notes on a piece of paper. After meeting all members of the other group, each player received a sheet of paper with the picture of each person they had just met, and a series of eight personal questions about them (their age, their religion, their job, whether they had obtained their Baccalauréat (the French high-school diploma), the country in which they were born, the district in which they live, whether they are married and their favorite hobby). Players were allowed to consult their notes. For each question subjects provided their answer, or selected "don't know", and indicated whether they learned this information from their chat, or simply guessed the answer. For each correct answer, subjects earned 1 euro.

For half of the sessions, subjects viewed one of the ambiguous recipients and one of the Senegalese recipients with a Christian name, and the other ambiguous recipient as well as the other Senegalese recipient with a Muslim name; for the other half of the sessions, this was reversed. By doing so, we avoid any confound between the ethnic type of the recipient and the face of the recipient, notably when we analyze the amount given by FdS donors to Senegalese recipients. Put differently, the fact that FdS donors see the same Senegalese face with alternated religious identities (one Christian, the other Muslim) allows us to run a within-face analysis. Figure 1 illustrates the faces and alternating names of our recipients in the dictator game.

It is important to note that while all recipients were recruited in the 19th district of Paris in a similar way as the donors, they never participated in our game sessions, and none was ever known personally by any of the donors. The donors saw the sequence of recipients only once and were asked to make a decision to allocate $a = \{0, 1, 2, 3, 4, 5\}$ euros to each recipient - out of 5 euros allotted to them each time, being assured that the amounts accruing to each recipient would actually be transferred to them. Donors were handed an answer sheet and provided with enough room to record their decisions in a private manner, albeit in a public space. Although recipients appeared sequentially on the screen, donors could observe the entire set of recipients on their answer sheet as they recorded their allocation decisions.

3 Experimental results

The dictator game was played after a socialization phase embodied by the speed chatting game. Prior to this socialization phase, Adida, Laitin and Valfort (2011) find that SM experience discrimination by FdS. Notably, holding the number of SM and SX in the game session at its average, FdS show taste-based discrimination against SM (especially SM with recognizable Muslim names); i.e. they are less generous toward SM than toward SX. In this section, we first test whether, holding the number of SM and SX in the game session at its average, FdS donors show a taste for discrimination toward SM recipients they have never met before (the recipients on the screen), or whether this taste-based discrimination is (temporarily) erased thanks to FdS-SM interactions during the speed-chatting game. We then test for the Hortefeux effect, that is we investigate whether FdS generosity toward SM is decreased by SM out-group salience in a way that is not matched by the impact of SX out-group salience on FdS generosity toward SX. Finally, we test whether the Hortefeux effect is

common knowledge among FdS. More precisely, we investigate whether FdS believe that the impact of SM out-group salience on FdS generosity toward SM recipients is significantly more negative than the impact of SX out-group salience on FdS generosity toward SX recipients.

3.1 FdS generosity toward SM, holding the number of SM at its average

We estimate equation (1) over the set of pairs composed of FdS donors and SM and SX recipients:

$$y = a + b.(\text{FdS} \rightarrow \text{SM}) + \mathbf{c}'.\mathbf{X} + d.\text{Face} + \mathbf{e}'.\mathbf{\Pi} + \epsilon, \quad (1)$$

where y refers to the amount given by the donors to the recipients in the dictator game. The dummy (FdS $\rightarrow$ SM) is equal to 1 if the donor is FdS and the recipient is SM and to 0 if the donor is FdS and the recipient is SX. As a consequence, coefficient b captures the difference between the amount given by FdS donors to SM recipients and the amount given by FdS donors to SX recipients. We also control for a vector of socioeconomic characteristics of FdS donors denoted $\mathbf{X}$. This vector contains information on the gender, age, household income, education and religiosity of FdS players, as well as on whether they know players who participated in previous game sessions. To run a within-face analysis, we introduce the Face dummy that is equal to 1 if the recipient is the Senegalese woman (and 0 if the recipient is the Senegalese man). To hold the number of Muslims and matched Christians in the game session at its average, we introduce $\mathbf{\Pi}$ which stands for a vector of session fixed effects. Finally, standard errors are clustered at the donor level since donations from the same donor cannot be considered as independent of one other. Note that our results are robust if we cluster the standard errors at the session level instead.

Table 4 presents OLS estimates from three model specifications of equation (1). In column 1, we control for the ethno-religious identity of the donor and of the recipient (i.e.: we control for the dummy (FdS $\rightarrow$ SM)). In column 2, we add the face and the session fixed effects. In column 3, we include the socioeconomic characteristics of FdS donors. The non significant coefficient of the dummy (FdS $\rightarrow$ SM) in all three columns (and notably in columns 2 and 3 where we control for session fixed effects) suggests that FdS donors do not treat SM and SX recipients differently when one holds the number of SM and SX in the game session at its average. This reveals that the socialization phase that preceded the dictator game erased FdS taste-based discrimination against all SM, whether they interacted with

those SM during the speed-chatting game or not.

This finding is consequential for the integration of Muslim immigrants in the French labor market, which Adida, Laitin and Valfort (2010) have shown to be particularly problematic.[20] It indeed suggests that FdS recruiters won't harbor a taste for discrimination against Muslim applicants provided they are "forced" to experience basic interactions with them (through job interviews for instance). This result could support the implementation of the anonymous CV, which gives equal likelihood of obtaining a job interview to applications that are comparable in training, experience and skills.[21]

3.2 FdS generosity toward SM when SM numbers increase

Holding the number of SM and SX in the game session at its average, FdS donors are as generous toward SM recipients as they are toward SX recipients. Does this result hold once the number of SM and SX in the game session varies? Tables 5 through 8 present useful descriptive statistics that provide basic intuitions about the answer. In Table 5, we find that a marginal increase in the number of SM, holding the number of SX constant at 1, yields non-monotonic results on all outcomes except for the FdS donation to SM recipients, which decreases monotonically from 2.83 euros in sessions with 1 SM to 1.60 euros in sessions with 2 SM to 0.75 euros in sessions with 3 SM. In Table 6, the marginal increase in the number of SM, holding constant the number of SX at 2, yields decreases in FdS donations across the board (average donations and donations toward FdS, North African, SM and SX recipients). These difference-of-means reveal a consistent discriminatory reaction toward SM recipients on the part of FdS donors as SM numbers increase. By contrast, Tables 7 and 8 indicate inconsistent patterns of FdS generosity when the number of SX increases, holding constant the number of SM. These difference-of-means tests bring to light no consistent FdS reaction to SX group salience.

In Table 9, we run a regression analysis estimating equation (2) over the set of pairs

[20] Adida, Laitin and Valfort (2010) compare the callbacks for an interview received by two French applicants of Senegalese background showing the same educational and work experience but differing on the religion: one is Christian, the other is Muslim. They confirm that the Muslim applicant faces high prejudice in France in 2009: she is 2.5 times less likely to receive a callback for an interview than is her Christian counterpart. Moreover, through a high-n survey conducted in France among Christian and Muslim households of Senegalese background, the authors find that Muslim households earn, on average, 400 euros less than Christian households each month (the equivalent of 14% of the average monthly household income for France in 2009). This income effect is consistent with the discrimination observed in the French labor market.

[21] In an anonymous CV, the candidates' first and last names, nationality, sex, age and e-mail address are hidden from the recruiter during the selection process before an interview.

composed of FdS donors and SM and SX recipients:

$$\begin{aligned} y &= a + b.(\text{FdS} \rightarrow \text{SM}) + c.(\text{FdS} \rightarrow \text{SM}).\text{nbSM} + d.(\text{FdS} \rightarrow \text{SM}).\text{nbSX} \\ &\quad + e.\text{nbSM} + f.\text{nbSX} + \mathbf{g}'.\mathbf{X} + h.\text{Face} + \epsilon, \end{aligned} \tag{2}$$

where y refers to the amount given by the donors to the recipients in the dictator game. The dummy (FdS $\rightarrow$ SM) is equal to 1 if the donor is FdS and the recipient is SM and to 0 if the donor is FdS and the recipient is SX. The variables nbSM and nbSX stand for the number of SM and SX players, respectively, in the session. As a consequence, coefficient b captures the difference between the amount given by FdS donors to SM recipients and the amount given by FdS donors to SX recipients when there are no SM and no SX in the game session. The impact of one additional SM in the room on FdS donations to SM recipients is given by the sum of coefficients c and e. The impact of one additional SX in the room on FdS donations to SX recipients is captured by coefficient f. We address the possibility that FdS participating in sessions with high numbers of SM (SX) systematically differ from FdS participating in sessions with low numbers of SM (SX), by introducing controls for observable individual socioeconomic characteristics (gender, age, education, household income, religiosity and whether they know players who participated in previous game sessions) that are denoted by $\mathbf{X}$. Additionally, in order to run a within-face analysis, we introduce the dummy Face that is again equal to 1 if the recipient is the Senegalese woman (and 0 if the recipient is the Senegalese man). Finally, standard errors are clustered at the donor level since donations from the same donor cannot be considered as independent of one other. Note that our results are robust if we cluster the standard errors at the session level instead.

Table 9, relying on OLS estimates of equation (2), reports results from three model specifications. In column 1, we control for the ethno-religious identity of the donor and of the recipient, for the number of SM and SX in the game session, as well as for the interactions between these two sets of variables. In column 2, we add the Face dummy in order to run a within-face analysis. In column 3, we include the socioeconomic characteristics of FdS donors. Our results first show that, in all three columns, having one more SM in the room significantly decreases FdS donations to SM recipients, as revealed by the sum of the coefficients c and e that appear in rows (2) and (4) in Table 9 (see the p-value of the first Wald test reported at the bottom of Table 9). Second, we observe that the impact of having one more SX in the room on FdS donations to SX recipients is positive, though not robustly significant, as shown by the coefficient f that appears in row (5) in Table 9.

Third, the p-value of the last Wald test reported at the bottom of Table 9 indicates that the difference between these two impacts is strongly significant across all model specifications, confirming our main result that FdS generosity toward SM recipients is decreased by SM out-group salience in a way that is not matched by the impact of SX out-group salience on FdS generosity toward SX.[22]

This finding suggests that, in the context of the French labor market, the expected discrimination-reducing impact of the anonymous CV would typically be short-lived once more than one Muslim employee populates the workforce. Indeed, increasing numbers of Muslims in the workforce will activate discrimination among the rooted French employers and therefore lower the chances for Muslim applicants to be hired (compared to matched Christian applicants).

3.3 FdS beliefs about other FdS generosity toward SM when SM numbers increase

Is the Hortefeux effect common knowledge? Do FdS believe that the impact of SM out-group salience on FdS generosity toward SM recipients is significantly more negative than the impact of SX out-group salience on FdS generosity toward SX recipients? To answer this question, we rely on the strategic dictator game which immediately followed the dictator game we have been analyzing so far. To introduce the strategic dictator game, our monitors explained that one of the players in the group would be chosen at random as the "model". This was a lie allowing us always to choose an FdS player without priming our subjects to the ethnicity of the model.[23] Players were then told to guess the amount the model had allocated to each of the recipients in the dictator game. They were also told that the player who guessed most closely to the actual decisions of the model would receive a prize of 30 euros. The strategic dictator game therefore helps us determine FdS beliefs about FdS

[22]We address the concern that the Hortefeux effect might be driven by an asymmetry between SM out-group salience (going from 1 to 3 SM) and SX out-group salience (going from 1 to 2 SX). First, Table 5, columns (a) and (b) indicate that FdS donations to SM when SM numbers increase from 1 to 2 decrease from 2.83 euros to 1.60 euros, a substantively large though not significant effect (p=0.15). Therefore, the pattern that characterizes the Hortefeux effect holds when SM out-group salience is limited to an increase from 1 to 2 SM. Second, Table 8 suggests that including cases where the number of SM in the session is equal to 3 might actually work against finding an Hortefeux effect. Indeed, FdS donations to SX, when SX out-group salience increases and when the number of SM in the session is equal to 3, *decrease* from 2.50 euros to 2 euros. Finally, we re-run the analysis in Table 9, excluding sessions where the number of SM is equal to 3. This reduces our power from 42 to 30 observations. We find that our substantive results hold, though their statistical significance weakens.

[23]For purposes of ethical oversight, all experimental protocols were reviewed and approved by the Stanford University IRB.

generosity for different levels of SM and SX out-group salience.

More precisely, we estimate equation (3) over the set of triads composed of FdS guessers, FdS donors, and SM and SX recipients:

$$\begin{aligned} y &= a + b.(\text{FdS} \rightsquigarrow \text{FdS} \rightarrow \text{SM}) \\ &\quad + c.(\text{FdS} \rightsquigarrow \text{FdS} \rightarrow \text{SM}).\text{nbSM} + d.(\text{FdS} \rightsquigarrow \text{FdS} \rightarrow \text{SM}).\text{nbSX} \\ &\quad + e.\text{nbSM} + f.\text{nbSX} + \mathbf{g}'.\mathbf{X} + h.\text{Face} + \epsilon, \end{aligned} \tag{3}$$

where y refers to FdS guesses about other FdS donations to SM and SX recipients. The dummy (FdS $\rightsquigarrow$ FdS $\rightarrow$ SM) is equal to 1 if the guesser is FdS, the donor is FdS and the recipient is SM and to 0 if the guesser is FdS, the donor is FdS and the recipient is SX. The variables nbSM and nbSX again stand for the number of SM and SX players, respectively, in the session. As a consequence, coefficient b captures the difference between FdS guesses about other FdS donations to SM recipients and FdS guesses about other FdS donations to SX recipients when there are no SM and no SX donors in the game session. The impact of one additional SM in the room on FdS guesses about other FdS donations to SM recipients is given by the sum of coefficients c and e. The impact of one additional SX in the room on FdS guesses about other FdS donations to SX recipients is captured by coefficient f. We control for a series of socioeconomic characteristics of FdS guessers (gender, age, education, household income, religiosity and whether they know players who participated in previous game sessions) that are denoted by $\mathbf{X}$. Additionally, in order to run a within-face analysis, we introduce the Face dummy that is again equal to 1 if the recipient is the Senegalese woman (and 0 if the recipient is the Senegalese man). Finally, standard errors are clustered at the guesser level since guesses from the same guesser cannot be considered as independent of one other. Note that our results are robust if we cluster the standard errors at the session level instead.

OLS estimates of equation (3) are presented in Table 10 which reports results from the three model specifications already presented in Table 9. First, we draw the reader's attention to coefficient f in row (5), which indicates that FdS believe other FdS are significantly more generous to SX when the number of SX increases across all model specifications. Second, we examine the effect of SM out-group salience on FdS beliefs about FdS donations to SM recipients (the sum of coefficients c and e that appear in rows (2) and (4) respectively). This effect is negative (although not significantly so). Third, the Wald test reported at the bottom

of the table indicates that the difference between these two effects is strongly significant across all model specifications. Overall, these results indicate that FdS correctly believe that the impact of SM out-group salience on FdS generosity toward SM recipients is significantly more negative than the impact of SX out-group salience on FdS generosity toward SX recipients. The fact that the Hortefeux effect is common knowledge may provide implicit justification for all FdS to act in conformity with the expected prejudicial behavior of in-group members following an increase in the size of the Muslim out-group. In other words, FdS may consider anti-social behavior toward Muslims in an environment with several Muslims around them as normal – so normal that former Minister Hortefeux could state it in a self-assured and unreflective manner.

This finding helps us further account for anti-Muslim discrimination in the French labor market. It highlights the fact that even a French employer who has no case against any particular Muslim will have a clear economic interest in favoring Christian applicants over matched Muslim applicants. Our results indeed suggest that an FdS employer would anticipate that an open employment policy would activate discriminatory behavior among his firm's employees and customers, thereby threatening the *esprit de corps* of the company as well as the comfort of its FdS customers.

4 Response to changes in non-FdS behaviors or changes in FdS preferences?

Understanding the mechanism underlying the Hortefeux effect constitutes the second objective of this paper. In this section, we develop a rational model augmented with other-regarding preferences to better understand the behavior of FdS donors in the dictator game. This model differentiates between two mechanisms: the decrease in FdS generosity toward Muslims when Muslim numbers increase may be a response to changes in the behavior of non-FdS when Muslim numbers increase; it may also result from changes in FdS preferences and notably from the activation of FdS taste-based discrimination against Muslims when FdS are surrounded by Muslims. We run an empirical test to identify which of these two mechanisms (or both) is (are) at work.

4.1 A rational model to account for FdS donors' behavior

Let us consider the following objective function of a FdS donor:

$$U = u(c, \omega_1\theta_1, ..., \omega_4\theta_4),$$

where u is an increasing and concave function. The first argument c stands for the consumption of the FdS donor and is given by $c = R - \sum_{j=1}^{j=4} y_j$ where R is the total endowment received by the FdS donor in the dictator game and y_j stands for the donation of the FdS donor to the recipient of ethno-religious type j. As shown by Figure 1, each game session is characterized by 6 recipients who are of 4 different ethno-religious types: 3 are FdS, 1 is SM, 1 is SX and 1 is (Muslim) North African. For the sake of simplicity and without loss of generality, we assume in this model that there are as many recipients as there are ethno-religious types, hence 4 recipients. In the other arguments of function u, ω_j $(j = 1, ..., 4)$ stands for the weight that the FdS donor assigns to the consumption of the recipient of ethno-religious type j. The consumption of the recipient of ethno-religious type j is given by $\theta_j = y_j + Y_j + Z_j$, where Y_j refers to the donations of all other FdS donors to the recipient of ethno-religious type j, while Z_j refers to the donations of all other non-FdS donors to the recipient of ethno-religious type j.

In what follows, we analyze the optimal behavior of FdS donors when the donations of non-FdS donors are given. Consistent with our experimental setup where players are not allowed to communicate with each other, we assume that FdS donors play non cooperatively. More precisely, each FdS donor chooses the vector of donations $\mathbf{y} = (y_1, y_2, y_3, y_4)$. For each FdS donor, the first order condition for the optimal choice of $\mathbf{y}$ is given by

$$-\frac{\partial u(\cdot)}{\partial c} + \omega_j \frac{\partial u(\cdot)}{\partial(\omega_j\theta_j)} = 0, j = 1, .., 4. \tag{4}$$

Let us restrict the analysis to the case of a unique and therefore symmetric equilibrium (i.e.: an equilibrium where all FdS donors make the same donations). Thus $\theta_j = Ny_j + Z_j$, where N represents the number of FdS donors. In that setting, equation (4) shows that $\mathbf{y}$ will change following an increase in the number of SM if $\mathbf{Z} = (Z_1, ..., Z_4)$ changes, meaning that changes in FdS behaviors are a response to changes in non-FdS behaviors. For instance, the Hortefeux effect can emerge if SM intra-group generosity increases with SM group salience to a greater extent than does SX intra-group generosity with SX group salience. In that case, there can be an opportunity for FdS donors to free ride on SM donors' generosity toward

SM recipients following SM group salience. Similarly, the Hortefeux effect can emerge if SM generosity toward FdS recipients decreases with SM group salience to a greater extent than does SX generosity toward FdS with SX group salience. In that case, there can be an opportunity for FdS donors to compensate FdS recipients (and therefore give less to SM recipients) following SM out-group salience. Alternatively, the Hortefeux effect can emerge if the positive weight that FdS donors assign to the well-being of SM recipients is a decreasing function of the relative size of the SM minority. As equation (4) shows, $\mathbf{y}$ can also change following an increase in the number of SM if $\mathbf{\Omega} = (\omega_1, ..., \omega_4)$ changes. [24]

4.2 An empirical test to identify the mechanism at work

Does the Hortefeux effect emerge because FdS donors respond to changes in the behavior of non-FdS donors when SM numbers increase, or because FdS donors assign a lower weight to the well-being of SM recipients when SM number increase? A sufficient condition for changes in FdS behavior not to be a response to changes in non-FdS behavior is given by:

$$\frac{\mathrm{d}Z_j}{\mathrm{d}N_{SM}} = 0 \text{ and } \frac{\mathrm{d}Z_j}{\mathrm{d}N_{SX}} = 0 \text{ for all } j,$$

where N_{SM} and N_{SX} stand for the number of SM and SX in the game session respectively.

Let us test whether this sufficient condition holds, that is whether the amount given by non-FdS donors to each of the 4 ethno-religious types of recipients is unaffected by the number of SM and the number of SX in the session. To do so, we estimate equation (6) over the set of pairs composed of non-FdS donors and all 4 ethno-religious types of recipients

[24] Note that these predictions rely on the assumption that equilibrium $\mathbf{y}$ is unique. If this assumption is relaxed, then changes in FdS behaviors following an increase in the number of SM could simply stem from the fact that FdS donors coordinate on a different equilibrium when SM numbers increase (as compared to the equilibrium they play when there are few SM around them). More precisely, if several equilibria exist, the Hortefeux effect can emerge because FdS donors coordinate on the equilibrium "giving less to SM recipients" when SM numbers increase. This situation makes sense in the case of strategic complementarity between FdS donors. Mathematically, strategic complementarity between FdS donors implies that:

$$\frac{\mathrm{d}^2 u(\cdot)}{\mathrm{d}y_j \mathrm{d}Y_j} = -\omega_j \frac{\partial^2 u(\cdot)}{\partial c \partial(\omega_j \theta_j)} + \omega_j^2 \frac{\partial^2 u(\cdot)}{\partial^2(\omega_j \theta_j)} > 0. \tag{5}$$

The concavity of u implies that $\frac{\partial^2 u(\cdot)}{\partial^2(\omega_j \theta_j)} < 0$. Inequality (5) can therefore be satisfied only with an unrealistic condition: *viz.*, if $\frac{\partial^2 u(\cdot)}{\partial c \partial(\omega_j \theta_j)} < 0$, that is if the marginal utility of consumption of the FdS donor decreases with the donations received by the recipient of ethno-religious type j.

(FdS, SM, SX, North African):

$$\begin{aligned} y &= a + b.(\text{non-FdS} \rightarrow \text{SM}) + c.(\text{non-FdS} \rightarrow \text{SM}).\text{nbSM} + d.(\text{non-FdS} \rightarrow \text{SM}).\text{nbSX} \\ &\quad + e.(\text{non-FdS} \rightarrow \text{FdS}) + f.(\text{non-FdS} \rightarrow \text{FdS}).\text{nbSM} + g.(\text{non-FdS} \rightarrow \text{FdS}).\text{nbSX} \\ &\quad + h.(\text{non-FdS} \rightarrow \text{NA}) + i.(\text{non-FdS} \rightarrow \text{NA}).\text{nbSM} + j.(\text{non-FdS} \rightarrow \text{NA}).\text{nbSX} \\ &\quad + k.\text{nbSM} + l.\text{nbSX} + \mathbf{m}'.\mathbf{X} + \epsilon, \end{aligned} \tag{6}$$

where y refers to the amount given by the donors to the recipients in the dictator game. The dummy (non-FdS $\rightarrow$ SM) is equal to 1 if the donor is non-FdS and the recipient is SM, and to 0 otherwise. The dummy (non-FdS $\rightarrow$ FdS) is equal to 1 if the donor is non-FdS and the recipient is FdS, and to 0 otherwise. The dummy (non-FdS $\rightarrow$ NA) is equal to 1 if the donor is non-FdS and the recipient is North African, and to 0 otherwise.

The amount given by non-FdS donors to SX recipients when there are no SM and no SX donors in the game session is the reference category. Therefore, coefficient b captures the difference between the amount given by non-FdS donors to SM recipients and the amount given by non-FdS donors to SX recipients, when there are no SM and no SX donors in the game session; coefficient e captures the difference between the amount given by non-FdS donors to FdS recipients and the amount given by non-FdS donors to SX recipients, when there are no SM and no SX donors in the game session; coefficient h captures the difference between the amount given by non-FdS donors to North-African recipients and the amount given by non-FdS donors to SX recipients, when there are no SM and no SX donors in the game session.

The variables nbSM and nbSX stand for the number of SM and SX players, respectively, in the game session. Therefore, the marginal impact of one additional SM (SX) in the room on FdS donations to SM recipients (as compared to the amount given by non-FdS donors to SM recipients when there are no SM and no SX donors in the session) is given by the sum of coefficients c and k (d and l); the marginal impact of one additional SM (SX) in the room on FdS donations to FdS recipients (as compared to the amount given by non-FdS donors to FdS recipients when there are no SM and no SX donors in the session) is given by the sum of coefficients f and k (g and l); the marginal impact of one additional SM (SX) in the room on FdS donations to North African recipients (as compared to the amount given by non-FdS donors to North African recipients when there are no SM and no SX donors in the session) is given by the sum of coefficients i and k (j and l); the marginal impact of one additional

SM (SX) in the room on FdS donations to SX recipients (as compared to the amount given by non-FdS donors to SX recipients when there are no SM and no SX donors in the session) is given by coefficient k (l).

We also control for a series of socioeconomic characteristics of the non-FdS donors (gender, age, education, household income, religiosity and whether they know players who participated in previous game sessions) that are denoted by $\mathbf{X}$. Finally, standard errors are clustered at the donor level since donations from the same donor cannot be considered as independent of one other. Note that our results are robust if we cluster the standard errors at the session level instead.

Table 11 presents results from three model specifications for OLS estimates of equation (6). In column 1, we control for the ethno-religious identity of the donor and of the recipient, for the number of SM and SX in the game session, as well as for the interactions between these two sets of variables. In column 2, we include the socioeconomic characteristics of non-FdS donors. Since, this inclusion generates a reduction in the sample size from 354 observations to 294 observations due to missing values for the income, education and religiosity of some of the non-FdS donors, we run a multiple imputation analysis in column 3. The p-values of the Wald tests reported at the bottom of Table 11 show that the amount given by non-FdS donors to each of the 4 ethno-religious types of recipients is impacted neither by the number of SM, nor by the number of SX in the game session.

In other words, FdS donors are the only donors in the dictator game to change their behavior when Muslim numbers increase. They therefore do not respond to changes in the behavior of non-FdS with SM out-group salience. Notably, the Hortefeux effect does not emerge because SM intra-group generosity increases with SM group salience in a way that is not matched by the effect of SX group salience on SX intra-group generosity (see Table A1 in the Appendix that confirms that the difference between these two impacts is never significant). Neither does the Hortefeux effect emerge because SM generosity toward FdS recipients decreases with SM group salience in a way that is not matched by the effect of SX group salience on SX generosity toward FdS (see Table A2 in the Appendix that confirms that the difference between these two impacts is never significant). Rather, relying on equation (4), the Hortefeux effect can only emerge because SM out-group salience has an impact on $\mathbf{\Omega}$, the vector of weights that FdS donors assign to the consumption of the different ethno-religious types of recipients. More precisely, the Hortefeux effect derives from an activation of FdS distaste toward Muslims with Muslim out-group salience.

One could object that the Hortefeux effect arises because FdS donors wrongly anticipate that non-FdS donors change their donations when Muslim numbers increase. Although we do not have information on FdS actual beliefs about non-FdS reactions to SM out-group salience, we consider this assumption unrealistic. First, we know that FdS beliefs about other FdS reactions to SM out-group salience (as compared to SX out-group salience) are correct, which is not consistent with FdS misreading other players' behavior. Second, our FdS players stem from the ethnically diverse 19th district of Paris. They therefore have many opportunities outside the lab to update their beliefs about non-FdS (and notably Muslim) behavior when Muslim numbers increase. If they fail to do so, we believe that this should be attributed to their anti-Muslim prejudice that is exacerbated in that context and therefore prevents them from interacting productively with Muslims.

5 Robustness checks

Two factors could challenge our results. First, as already mentioned, SM (SX) participating in sessions with high numbers of their in-group could differ from SM (SX) participating in sessions with low numbers of their in-group. Indeed, it might be that more religious SM (SX) are more available to play games on Sundays (Fridays) and we would therefore observe a higher number of religious SM (SX) on Sundays (Fridays). In other words, SM (SX) out-group salience could partly capture the effect of being in contact with religious SM (SX). It is therefore necessary to correct for this potential bias by controlling for the average level of religiosity of SM and SX players in the game session. Second, we already emphasized that we assigned subjects to a game session such that no significant correlation could be observed between the number of subjects of different ethno-religious types across the game sessions. Yet, it could still be that SM and SX out-group salience partly captures the effect of the group salience of other ethno-religious types of players. To rule out this possibility, we must control for the out-group salience of these other ethno-religious types of players: FdS, other players of European and Judeo-Christian background, other players of African and Judeo-Christian background, other players of African and Muslim background and players of North African and Muslim background. In this section, we implement these two robustness checks for each of our three main results: the Hortefeux effect; FdS beliefs that the impact of SM out-group salience on other FdS generosity toward SM recipients is significantly more negative than the impact of SX out-group salience on FdS generosity toward SX recipients;

and the unchanged behavior of non-FdS donors when SM or SX numbers increase.

5.1 The Hortefeux effect

Is the Hortefeux effect robust to the control for the average religiosity of SM and SX players and for the out-group salience of other ethno-religious types of players? Results from our robustness checks are reported in Table 12. In column 1, we reproduce the OLS estimates of equation (2) (these OLS estimates were initially displayed in column 3 of Table 9). In column 2, we control for the average religiosity of SM and SX players in each game session. In column (3), we control for the out-group salience of other ethno-religious types of players. More precisely, column 3 provides the OLS estimates of the following version of equation (2):

$$\begin{aligned} y \;=\; & a + b.(\text{FdS} \rightarrow \text{SM}) + c.(\text{FdS} \rightarrow \text{SM}).nbSM + d.(\text{FdS} \rightarrow \text{SM}).nbSX \\ & + e.nbSM + f.nbSX + \mathbf{g}'.\mathbf{X} + h.Face \\ & + i.(\text{FdS} \rightarrow \text{SM}).\text{nbOEJC} + j.(\text{FdS} \rightarrow \text{SM}).\text{nbOAJC} + k.(\text{FdS} \rightarrow \text{SM}).\text{nbOAM} \\ & + l.(\text{FdS} \rightarrow \text{SM}).\text{nbNA} + m.\text{nbOEJC} + n.\text{nbOAJC} + o.\text{nbOAM} + p.\text{nbNA} + \epsilon, \end{aligned}$$

where the variables nbOEJC, nbOAJC, nbOAM and nbNA stand for the number of other players (i.e. not FdS) of European and Judeo-Christian background, other players (i.e. not SX) of African and Judeo-Christian background, other players (i.e. not SM) of African and Muslim background and players of North African and Muslim background, respectively. As a consequence, coefficient b captures the difference between the amount given by FdS donors to SM recipients and the amount given by FdS donors to SX recipients when there are only FdS donors in the game session.

The Hortefeux effect is robust to the control for the average religiosity of SM and SX players in each game session (column 2) and to the control for the effect of the out-group salience of other ethno-religious types of players. Having one more SM in the room significantly decreases FdS donations to SM recipients (as compared to the situation where there are only FdS donors in the room), as revealed by the sum of the coefficients c and e that appear in rows (2) and (4) in Table 12 (see the p-value of the first Wald test reported at the bottom of Table 12). Coefficient f in row (5) in Table 12 indicates that the impact of having one more SX in the room on FdS donations to SX recipients (as compared to the situation where there are only FdS donors in the room) is not significant. Yet, the p-value of the last

Wald test reported at the bottom of Table 12 indicates that the difference between these two impacts is strongly significant, confirming our main result that FdS generosity toward SM recipients is decreased by SM out-group salience in a way that is not matched by the impact of SX out-group salience on FdS generosity toward SX.

5.2 The Hortefeux effect as common knowledge

Is the Hortefeux effect still common knowledge among rooted French when we control for the average religiosity of SM and SX players and for the out-group salience of other ethno-religious types of players? Results from our robustness checks are reported in Table 13. In column 1, we reproduce the OLS estimates of equation (3) (these OLS estimates were initially displayed in column 3 of Table 10). In column 2, we control for the average religiosity of SM and SX players in each game session. In column 3, we control for the group salience of other ethno-religious types of players.

We again find support for FdS believing that the impact of SM out-group salience on other FdS generosity toward SM recipients is more negative than the impact of SX out-group salience on FdS generosity toward SX recipients. The difference between these two impacts is close to statistical significance in column 2 (the p-value of the last Wald test reported at the bottom of Table 13 is equal to 0.15) and is significant at the 1% confidence level in column 3.

5.3 The unchanged behavior of non-FdS donors when SM or SX numbers increase

Are non-FdS donors still unaffected by SM and SX out-group salience when we control for the average religiosity of SM and SX players and for the out-group salience of other ethno-religious types of players? Results from our robustness checks are reported in Table 14. In column 1, we reproduce the OLS estimates of equation (5) when a multiple imputation analysis is conducted (these OLS estimates were initially displayed in column 3 of Table 11).[25] In column 2, we control for the average religiosity of SM and SX players in each game session. In column 3, we control for the group salience of other ethno-religious types of players.

The p-values of the Wald tests reported at the bottom of Table 14 confirm that the

[25] Our results hold when the robustness checks are run without a multiple imputation analysis.

amount given by non-FdS donors to each of the 4 ethno-religious types of recipients is impacted neither by the number of SM, nor by the number of SX in the game session, with the exception of the amount given by non-FdS donors to North African recipients. Column 3 indicates that this amount increases with the number of SM in the game session (significant at the 10% level). However, this result does not undermine our conclusion that changes in FdS generosity toward SM recipients when SM numbers increase is not a response to changes in non-FdS generosity when SM and SX numbers increase. The sign of the impact of SM group salience on non-FdS generosity toward North African recipients is indeed not consistent with the Hortefeux effect: non-FdS donors give more to North African recipients when SM numbers increase, not less. If FdS donors were responding to this change, then we would observe that they give more, not less, to SM recipients (in order to compensate them) when SM numbers increase.

6 Conclusion

Relying on experimental games bringing together rooted French and a set of immigrants differing only on religion, we find that FdS generosity toward Muslims is significantly decreased with Muslim out-group salience. No such result is obtained with the impact of Christian out-group salience on FdS generosity toward matched Christians. We portray this result on Muslim out-group salience as the Hortefeux effect, lending support to the group threat theory. Moreover, based on a rational model and an empirical test of the mechanisms this model uncovers, we identify that the Hortefeux effect derives from an activation of FdS taste-based discrimination against Muslims when Muslim numbers increase.

Our findings are critical for explaining Muslims' economic handicap today and predicting its evolution in the next decades, not only in France but also in other Western countries provided our results hold there as well.[26] First, the simple expectation that the presence of several Muslim employees exacerbates distaste among the rooted workforce and customers motivates any recruiter, even if she has no case against any particular Muslim, to screen out Muslim applicants, effectively discriminating on the basis of perceived religion.[27] Second, other things held constant, anti-Muslim prejudice will increase in the future with the predicted growing share of Muslim immigrants in Western countries, potentially becoming

[26] We intend to replicate our experimental set-up in a number of European countries.

[27] Our findings also offer an explanation for religious discrimination that might exist in other markets that are critical for successful economic integration of immigrants, such as the housing and marriage markets.

a source of deep social tensions.

Solutions to discrimination against Muslims are of urgent concern. As shown by Paluck and Green (2009), evidence on prejudice-reducing policies is at best inconclusive, such that there is so far no efficient intervention to fight against anti-Muslim discrimination. We hope that the search for policies that work effectively to reduce anti-Muslim prejudice will be aided by our identification of one of the mechanisms – i.e. the activation of distaste toward Muslims by Muslim out-group salience – that sustain it.

References

[1] Adida, Claire L., David D. Laitin, and Marie-Anne Valfort. 2010. "Identifying Barriers to Muslim Integration in France." *Proceedings of the National Academy of Sciences* 107(52): 384-390.

[2] Adida, Claire L., David D. Laitin and Marie-Anne Valfort. 2011. "Discrimination in Equilibrium: Muslims and their Economic Handicap in France", working paper.

[3] Allen, Christopher, and Jorgen S. Nielsen. 2002. "Report on Islamophobia." European Monitoring Centre on Racism and Xenophobia.

[4] Allport, G. 1954. *The nature of prejudice*. Doubleday, New York.

[5] Blalock, H. M. 1967. *Toward a theory of minority-group relations*. Capricorn Books, New York.

[6] Bowyer, Benjamin T. 2009. "The Contextual Determinants of Whites' Racial Attitudes in England." *British Journal of Political Science*, 39(3): 559-586.

[7] Camerer, Colin F. 2003. *Behavioral Game Theory*. Princeton: Princeton University Press.

[8] Citrin, Jack, and John Sides. 2008. "Immigration and the Imagined Community in Europe and the United States." *Political Studies*, 56(1): 3356.

[9] Davila, Alberto, and Marie T. Mora. 2005. "Changes in the earnings of Arab men in the US between 2000 and 2002." *Journal of Population Economics*, 18(4): 587-601.

[10] Diop, A.M. 1988. "Stéréotypes et stratégies", in R. Leveau and G. Kepel, ed. *Les Musulmans dans la société française*, Presses de la Foundation Nationale des Sciences Politiques, Paris, 77-98.

[11] Dustmann, Christian, and Ian Preston. 2001. "Attitudes to Ethic Minorities, Ethnic Context and Location Decisions." *Economic Journal*, 111(470): 353-73.

[12] *Entre les Murs* (2008), film directed by Laurent Cantet.

[13] Fetzer, Joel S., and J. Christopher Soper. 2003. "The Roots of Public Attitudes toward State Accommodation of European Muslims' Religious Practices before and after September 11." *Journal for the Scientific Study of Religion*, 42(2): 247-258.

[14] Forsythe, Robert, Joel L. Horowitz, N. E. Savin, and Martin Sefton. 1994. "Fairness in simple bargaining experiments." *Games and Economic Behavior*, 6(3): 347-369.

[15] Gallup Report. 2009. "Religious Perceptions in America: With an In-Depth Analysis of U.S. Attitudes Toward Muslims and Islam."

[16] Gorodzeisky, Anastasia, and Moshe Semyonov. 2009. "Terms of exclusion: public views towards admission and allocation of rights to immigrants in European countries." *Ethnic and Racial Studies*, 32(3): 401-423.

[17] Hjerm, Mikael. 2007. "Do Numbers Really Count? Group Threat Theory Revisited." *Journal of Ethnic and Migration Studies*, 33(8): 1253-1275.

[18] Hopkins, Daniel. 2010. "Politicized places: explaining where and when immigrants provoke local opposition." *American Political Science Review*, 104(1): 40-60.

[19] Kahneman, Daniel, Jack L. Knetsch, and Richard H. Thaler. 1986. "Fairness and the Assumptions of Economics." *The Journal of Business*, 59(4): 285-300.

[20] Kaushal, Neeraj, Robert Kaestner, and Cordelia Reimers. 2007. "Labor Market Effects of September 11th on Arab and Muslim Residents of the United States." *Journal of Human Resources*, 42(2): 275-308.

[21] Krueger, Alan B., and Jorn-Steffen Pischke. 1997. "A Statistical Analysis of Crime Against Foreigners in United Germany." *Journal of Human Resources*, 32(1): 182-209.

[22] Paluck, E.L. and D.P. Green. 2009. "Prejudice Reduction: What works? A Critical look at evidence from the field and the laboratory." *Annual Review of Psychology* 60: 339-367.

[23] Pew Research Center Report. 2011. "The Future of the Global Muslim Population. Projections for 2010-2030."

[24] Samuelson, Larry. 2005. "Economic Theory and Experimental Economics." *Journal of Economic Literature*, 43(1): 65-107.

[25] Savelkoul, Michael, Peer Scheepers, Jochem Tolsma, and Louk Hagendoorn. 2010. "Anti-Muslim Attitudes in The Netherlands: Tests of Contradictory Hypotheses Derived from Ethnic Competition Theory and Intergroup Contact Theory." *European Sociological Review*. Available online at `www.esr.oxfordjournals.org`.

[26] Scheepers, Peer, Mérove Gijsberts, and Marcel Coenders. 2002. "Ethnic Exclusionism in European Countries. Public Opposition to Civil Rights for Legal Migrants as a Response to Perceived Ethnic Threat." *European Sociological Review*, 18(1): 17-34.

[27] Schlueter, Elmar, Peter Schmidt, and Ulrich Wagner. 2008. "Disentangling the Causal Relations of Perceived Group Threat and Outgroup Derogation: Cross-national Evidence from German and Russian Panel Surveys." *European Sociological Review*, 24(5): 567-581.

[28] Schlueter, Elmar, and Peer Scheepers. 2010. "The relationship between outgroup size and anti-outgroup attitudes: A theoretical synthesis and empirical test of group threat- and intergroup contact theory." *Social Science Research*, 39(2): 285-295.

[29] Schneider, Silke L. 2008. "Anti-Immigrant Attitudes in Europe: Outgroup Size and Perceived Ethnic Threat." *European Sociological Review*, 24(1): 53-67.

[30] Sheridan, Lorraine P., and Raphael Gillett. 2005. "Major world events and discrimination." *Asian Journal of Social Psychology*, 8(2): 191-197.

[31] Strabac, Zan, and Ola Listhaug. 2008. "Anti-Muslim prejudice in Europe: A multilevel analysis of survey data from 30 countries." *Social Science Research*, 37(1): 268-286.

[32] Taylor, Marylee C. 1998. "How White Attitudes Vary with the Racial Composition of Local Populations: Numbers Count." *American Sociological Review*, 63(4): 512-535.

Tables and Figures

Table 1: Position of "FdS" respondents to the 2009 ESS and of FdS participants in our 2009 experiments on a left wing-right wing scale. Difference of means analysis.

"FdS" respondents to the 2009 ESS (a)	FdS participants in our 2009 experiment (b)	Diff (b-a)
1.94 (N=64)	1.42 (N=19)	-0.52 p=0.01

Notes: The table reports a difference of means analysis. The variable of interest captures the position of respondents on a left wing-right wing scale. It ranges from 1 to 3, where 1 means "more leftist than rightist", 2 means "in-between" and 3 means "more rightist than leftist."

Table 2: Position of "FdS" respondents to the 2009 ESS and of FdS participants in our 2009 experiment on a left wing-right wing scale. OLS analysis.

	Dep. var.: Position on a left wing-right wing scale				
	(1)	(2)	(3)	(4)	(5)
(1) European Social Survey	0.516***	0.522***	0.517***	0.473**	0.447**
	(0.177)	(0.176)	(0.179)	(0.191)	(0.198)
(2) Female		0.063	0.054	0.046	-0.007
		(0.183)	(0.202)	(0.203)	(0.211)
(3) Age			0.001	-0.001	0.000
			(0.006)	(0.006)	(0.007)
(4) Education				-0.093	-0.050
				(0.105)	(0.111)
(5) Household income					-0.130
					(0.089)
R2	0.065	0.066	0.066	0.074	0.110
Observations	83	83	83	83	75

Notes: The table reports OLS estimates. The unit of observation is the individual. The dependent variable is categorical. It ranges from 1 to 3, where 1 means "more leftist than rightist", 2 means "in-between" and 3 means "more rightist than leftist." "European Social Survey" is a dummy that takes the value 1 if the individual is a respondent to the 2009 ESS, and the value 0 if she is a participant in our 2009 experiments. "Female" is a dummy that takes the value 1 if the individual is female and the value 0 otherwise. "Age" is equal to the age of the individual. "Education" is a categorical variable that ranges from 1 (less than lower secondary completed) to 4 (post secondary completed). "Household income" is a categorical variable that ranges from 1 (first quintile) to 5 (fifth quintile). Standard errors are robust. *, ** and *** indicate significance at the 10, 5 and 1% levels.

Table 3: Variations in the ethno-religious composition of player-sets across game sessions.

	S1	S2	S3	S4	S5	S6	S7	S8
Players of European and Judeo-Christian background	**4**	**3**	**2**	**3**	**5**	**5**	**4**	**3**
Among which FdS	*4*	*2*	*2*	*3*	*4*	*2*	*2*	*2*
Players of African and Judeo-Christian background	**2**	**4**	**2**	**2**	**1**	**2**	**2**	**2**
Among which SX	*1*	*2*	*1*	*1*	*1*	*2*	*1*	*2*
Players of African and Muslim background	**2**	**2**	**2**	**2**	**4**	**3**	**3**	**4**
Among which SM	*1*	*2*	*2*	*2*	*3*	*2*	*1*	*3*
Players of North African and Muslim background	**2**	**1**	**4**	**3**	**0**	**0**	**1**	**1**

Figure 1: Variations in the ethno-religious identity of the recipients in the dictator game.

Firstname	Version 1	Sylvie	Georges	Khadija	Jean-Marc	Farida	Michel
	Version 2	Sylvie	Mohammed	Joséphine	Jean-Marc	Christine	Aboubacar
Ethnicity/ Religion	Version 1	FdS	FdS	SM	FdS	Muslim North African	SX
	Version 2	FdS	Muslim North African	SX	FdS	FdS	SM

Table 4: FdS generosity toward SM and SX recipients, holding the number of SM and SX at their averages. OLS analysis.

	Dep. var.: FdS donations to SM and SX		
	(1)	(2)	(3)
(1) FdS → SM	0.286	0.389	0.389
	(0.378)	(0.328)	(0.364)
(2) Female			2.304***
			(0.707)
(3) Age			0.008
			(0.013)
(4) Education			0.089
			(0.246)
(5) Household income			-0.188
			(0.135)
(6) Religiosity			0.331
			(0.353)
(7) Knows players from previous sessions			0.214
			(1.336)
Face fixed effects	No	Yes	Yes
Session fixed effects	Yes	Yes	Yes
R2	0.352	0.427	0.587
Observations	42	42	42

Notes: The table reports OLS estimates. The unit of observation is a dyad formed by a FdS donor and a SM or SX recipient. The dependent variable is categorical. It ranges from 0 (the donor gives nothing to the recipient) to 5 (the donor gives her total endowment to the recipient). "FdS → SM" is a dummy that takes the value 1 if the donor is FdS and the recipient is SM, and the value 0 if the donor is FdS and the recipient is SX. "Female" is a dummy that takes the value 1 if the donor is female and the value 0 otherwise. "Age" is equal to the age of the donor. "Education" is a categorical variable that ranges from 1 (less than primary school completed) to 10 (higher than college degree completed). "Household income" is a categorical variable that ranges from 1 (less than 500 euros monthly) to 11 (more than 7,500 euros monthly). "Religiosity" is a categorical variable that ranges from 1 (never attends religious services) to 7 (attends religious services several times a week). "Knows players from previous sessions" is a dummy that takes the value 1 if the donor knows players who participated in previous game sessions and the value 0 otherwise. The coefficient in row (1) stands for the difference between the amount given by FdS donors to SM recipients and the amount given by FdS donors to SX recipients. Standard errors are clustered at the donor level. *, ** and *** indicate significance at the 10, 5 and 1% levels.

Table 5: Impact of one additional SM on FdS donors' generosity, holding the number of SX equal to 1.

FdS donors' donations	Session with 1 SM (a)	Session with 2 SM (b)	Session with 3 SM (c)	Diff (b-a)	Diff (c-b)	Diff (c-a)
Average donations	2.06 (N=36)	1.03 (N=30)	1.83 (N=24)	-1.03 p=0.00	+0.80 p=0.01	-0.23 p=0.50
Donations to FdS	1.67 (N=18)	0.93 (N=15)	2.00 (N=12)	-0.74 p=0.06	+1.07 p=0.02	+0.33 p=0.48
Donations to North Africans	2.17 (N=6)	1.00 (N=5)	1.75 (N=4)	-1.17 p=0.07	+0.75 p=0.43	-0.42 p=0.63
Donations to SM	2.83 (N=6)	1.60 (N=5)	0.75 (N=4)	-1.23 p=0.15	-0.85 p=0.19	-2.08 p=0.02
Donations to SX	2.33 (N=6)	0.80 (N=5)	2.50 (N=4)	-1.53 p=0.02	+1.70 p=0.07	+0.17 p=0.84

Table 6: Impact of one additional SM on FdS donors' generosity, holding the number of SX equal to 2.

FdS donors' donations	Session with 2 SM (a)	Session with 3 SM (b)	Diff (b-a)
Average donations	2.33 (N=24)	1.92 (N=12)	-0.42 p=0.41
Donations to FdS	1.83 (N=12)	1.67 (N=6)	-0.16 p=0.83
Donations to North Africans	2.50 (N=4)	1.50 (N=2)	-1.00 p=0.62
Donations to SM	3.50 (N=4)	3.00 (N=2)	-0.50 p=0.72
Donations to SX	2.50 (N=4)	2.00 (N=2)	-0.50 p=0.71

Table 7: Impact of one additional SX on FdS donors' generosity, holding the number of SM equal to 2.

FdS donors' donations	Session with 1 SX (a)	Session with 2 SX (b)	Diff (b-a)
Average donations	1.03 (N=30)	2.33 (N=24)	+1.30 p=0.00
Donations to FdS	0.93 (N=15)	1.83 (N=12)	+1.33 p=0.05
Donations to North Africans	1.00 (N=5)	2.50 (N=4)	+1.50 p=0.03
Donations to SM	1.60 (N=5)	3.50 (N=4)	+1.90 p=0.06
Donations to SX	0.80 (N=5)	2.50 (N=4)	+1.70 p=0.01

Table 8: Impact of one additional SX on FdS donors' generosity, holding the number of SM equal to 3.

FdS donors' donations	Session with 1 SX (a)	Session with 2 SX (b)	Diff (b-a)
Average donations	1.83 (N=24)	1.92 (N=12)	+0.09 p=0.87
Donations to FdS	2.00 (N=12)	1.67 (N=6)	-0.33 p=0.67
Donations to North Africans	1.75 (N=4)	1.50 (N=2)	-0.25 p=0.90
Donations to SM	0.75 (N=4)	3.00 (N=2)	+2.25 p=0.25
Donations to SX	2.50 (N=4)	2.00 (N=2)	-0.50 p=0.72

Table 9: FdS generosity toward SM and SX recipients when SM and SX numbers increase. OLS analysis.

	Dep. var.: FdS donations to SM and SX		
	(1)	(2)	(3)
(1) FdS → SM	0.265	2.369*	2.369*
	(1.030)	(1.201)	(1.319)
(2) (FdS → SM)*Number of SM	-0.904**	-0.970**	-0.970**
	(0.416)	(0.388)	(0.427)
(3) (FdS → SM)*Number of SX	1.422*	-0.010	-0.010
	(0.720)	(0.852)	(0.936)
(4) Number of SM	-0.084	-0.051	-0.067
	(0.384)	(0.367)	(0.273)
(5) Number of SX	0.506	1.222**	1.480**
	(0.512)	(0.507)	(0.623)
(6) Female			0.851*
			(0.418)
(7) Age			0.010
			(0.012)
(8) Education			0.151
			(0.202)
(9) Household income			-0.101
			(0.095)
(10) Religiosity			0.346
			(0.301)
(11) Knows players from previous sessions			0.550
			(0.894)
Face fixed effects	No	Yes	Yes
P-value of the Wald test: (2)+(4)=0	0.01	0.01	0.01
P-value of the Wald test: (5)=0	0.33	0.03	0.03
P-value of the Wald test: (2)+(4)=(5)	0.02	0.00	0.00
R2	0.308	0.364	0.563
Observations	42	42	42

Notes: The table reports OLS estimates. The unit of observation is a dyad formed by a FdS donor and a SM or SX recipient. The dependent variable is categorical. It ranges from 0 (the donor gives nothing to the recipient) to 5 (the donor gives her total endowment to the recipient). "FdS → SM" is a dummy that takes the value 1 if the donor is FdS and the recipient is SM, and the value 0 if the donor is FdS and the recipient is SX. "Number of SM" is equal to the number of SM in the game session. "Number of SX" is equal to the number of SX in the game session. "Female" is a dummy that takes the value 1 if the donor is female and the value 0 otherwise. "Age" is equal to the age of the donor. "Education" is a categorical variable that ranges from 1 (less than primary school completed) to 10 (higher than college degree completed). "Household income" is a categorical variable that ranges from 1 (less than 500 euros monthly) to 11 (more than 7,500 euros monthly). "Religiosity" is a categorical variable that ranges from 1 (never attends religious services) to 7 (attends religious services several times a week). "Knows players from previous sessions" is a dummy that takes the value 1 if the donor knows players who participated in previous game sessions and the value 0 otherwise. The sum of the coefficients in rows (2) and (4) stands for the impact on the amount given by FdS donors to SM recipients when there are no SM and no SX donors in the session, of having one additional SM in the game session. The coefficient in row (5) stands for the impact on the amount given by FdS donors to SX recipients when there are no SM and no SX donors in the session, of having one additional SX in the game session. Standard errors are clustered at the donor level. *, ** and *** indicate significance at the 10, 5 and 1% levels.

Table 10: FdS guesses about other FdS generosity toward SM and SX recipients when SM and SX numbers increase. OLS analysis.

	Dep. var.: FdS guesses about FdS donations to SM and SX		
	(1)	(2)	(3)
(1) FdS $\rightsquigarrow$ FdS $\rightarrow$ SM	0.849	3.447**	3.447**
	(0.878)	(1.485)	(1.632)
(2) (FdS $\rightsquigarrow$ FdS $\rightarrow$ SM)*Number of SM	-0.464	-0.545	-0.545
	(0.360)	(0.318)	(0.350)
(3) (FdS $\rightsquigarrow$ FdS $\rightarrow$ SM)*Number of SX	0.283	-1.485	-1.485
	(0.512)	(0.948)	(1.041)
(4) Number of SM	0.108	0.149	0.254
	(0.416)	(0.387)	(0.298)
(5) Number of SX	1.349**	2.233***	2.780***
	(0.566)	(0.659)	(0.829)
(6) Female			0.997**
			(0.362)
(7) Age			-0.008
			(0.012)
(8) Education			0.023
			(0.215)
(9) Household income			0.018
			(0.086)
(10) Religiosity			0.352
			(0.286)
(11) Knows players from previous sessions			-1.582**
			(0.714)
Face fixed effects	No	Yes	Yes
P-value of the Wald test: (2)+(4)=0	0.33	0.31	0.35
P-value of the Wald test: (5)=0	0.03	0.00	0.00
P-value of the Wald test: (2)+(4)=(5)	0.02	0.00	0.00
R2	0.269	0.350	0.563
Observations	42	42	42

Notes: The table reports OLS estimates. The unit of observation is a triad formed by a FdS guesser, a FdS donor and a SM or SX recipient. The dependent variable is categorical. It ranges from 0 (the guesser guesses that the donor gives nothing to the recipient) to 5 (the guesser guesses that the donor gives her total endowment to the recipient). "FdS $\rightsquigarrow$ FdS $\rightarrow$ SM" is a dummy that takes the value 1 if the guesser is FdS, the donor is FdS and the recipient is SM, and the value 0 if the guesser is FdS, the donor is FdS and the recipient is SX. "Number of SM" is equal to the number of SM in the game session. "Number of SX" is equal to the number of SX in the game session. "Female" is a dummy that takes the value 1 if the donor is female and the value 0 otherwise. "Age" is equal to the age of the donor. "Education" is a categorical variable that ranges from 1 (less than primary school completed) to 10 (higher than college degree completed). "Household income" is a categorical variable that ranges from 1 (less than 500 euros monthly) to 11 (more than 7,500 euros monthly). "Religiosity" is a categorical variable that ranges from 1 (never attends religious services) to 7 (attends religious services several times a week). "Knows players from previous sessions" is a dummy that takes the value 1 if the donor knows players who participated in previous game sessions and the value 0 otherwise. The sum of the coefficients in rows (2) and (4) stands for the impact on FdS guesses about the amount given by FdS donors to SM recipients when there are no SM and no SX donors in the session, of having one additional SM in the game session. The coefficient in row (5) stands for the impact on on FdS guesses about the amount given by FdS donors to SX recipients when there are no SM and no SX donors in the session, of having one additional SX in the game session. Standard errors are clustered at the guesser level. *, ** and *** indicate significance at the 10, 5 and 1% levels.

Table 11: Non-FdS generosity toward all ethno-religious types of recipients when SM and SX numbers increase. OLS analysis.

	Dep. var.: Non-FdS donations to all types of recipients		
	(1)	(2)	(3)
(1) non-FdS → SM	-0.794 (0.607)	-0.605 (0.717)	-0.791 (0.616)
(2) (non-FdS → SM)*Number of SM	0.107 (0.248)	0.252 (0.346)	0.112 (0.252)
(3) (non-FdS → SM)*Number of SX	0.377 (0.333)	0.101 (0.437)	0.370 (0.338)
(4) non-FdS → FdS	-0.529 (0.472)	-0.447 (0.519)	-0.530 (0.476)
(5) (non-FdS → FdS)*Number of SM	0.131 (0.239)	0.243 (0.233)	0.132 (0.241)
(6) (non-FdS → FdS)*Number of SX	0.126 (0.273)	-0.066 (0.233)	0.126 (0.276)
(7) non-FdS → NA	0.050 (0.579)	0.321 (0.655)	0.051 (0.585)
(8) (non-FdS → NA)*Number of SM	-0.105 (0.283)	-0.263 (0.363)	-0.100 (0.287)
(9) (non-FdS → NA)*Number of SX	-0.006 (0.346)	0.054 (0.402)	-0.015 (0.351)
(10) Number of SM	-0.037 (0.272)	-0.008 (0.310)	0.009 (0.241)
(11) Number of SX	-0.246 (0.354)	-0.004 (0.402)	-0.245 (0.351)
(12) Female		0.491** (0.244)	0.354 (0.237)
(13) Age		0.025* (0.013)	0.032** (0.013)
(14) Education		0.112** (0.045)	0.062 (0.047)
(15) Household income		-0.015 (0.060)	0.001 (0.057)
(16) Religiosity		0.069 (0.067)	0.058 (0.058)
(17) Knows players from previous sessions		-0.291 (0.336)	-0.036 (0.275)
Multiple Imputation Analysis	No	No	Yes
P-value of the Wald test: (2)+(10)=0	0.72	0.37	0.55
P-value of the Wald test: (3)+(11)=0	0.70	0.80	0.71
P-value of the Wald test: (5)+(10)=0	0.64	0.26	0.41
P-value of the Wald test: (6)+(11)=0	0.70	0.82	0.70
P-value of the Wald test: (8)+(10)=0	0.54	0.28	0.67
P-value of the Wald test: (9)+(11)=0	0.45	0.90	0.44
P-value of the Wald test: (10)=0	0.89	0.98	0.97
P-value of the Wald test: (11)=0	0.49	0.99	0.49
R2	0.010	0.129	0.102
Observations	354	294	354

Notes: The table reports OLS estimates. The unit of observation is a dyad formed by a non-FdS donor and all of the 4 ethno-religious types of recipients. The dependent variable is categorical. It ranges from 0 (the donor gives nothing to the recipient) to 5 (the donor gives her total endowment to the recipient). "non-FdS → SM" is a dummy that takes the value 1 if the donor is non-FdS and the recipient is SM, and 0 otherwise. "non-FdS → FdS" is a dummy that takes the value 1 if the donor is non-FdS and the recipient is FdS, and 0 otherwise. "non-FdS → NA" is a dummy that takes the value 1 if the donor is non-FdS and the recipient is North African, and 0 otherwise. "Number of SM" is equal to the number of SM in the game session. "Number of SX" is equal to the number of SX in the game session. "Female" is a dummy that takes the value 1 if the donor is female and the value 0 otherwise. "Age" is equal to the age of the donor. "Education" is a categorical variable that ranges from 1 (less than primary school completed) to 10 (higher than college degree completed). "Household income" is a categorical variable that ranges from 1 (less than 500 euros monthly) to 11 (more than 7,500 euros monthly). "Religiosity" is a categorical variable that ranges from 1 (never attends religious services) to 7 (attends religious services several times a week). "Knows players from previous sessions" is a dummy that takes the value 1 if the donor knows players who participated in previous game sessions and the value 0 otherwise. The sum of the coefficients in rows (2) and (10) ((3) and (11)) stands for the impact on the amount given by FdS donors to SM recipients when there are no SM and no SX donors in the session, of having one additional SM (SX) in the game session. The sum of the coefficients in rows (5) and (10) ((6) and (11)) stands for the impact on the amount given by FdS donors to FdS recipients when there are no SM and no SX donors in the session, of having one additional SM (SX) in the game session. The sum of the coefficients in rows (8) and (10) ((9) and (11)) stands for the impact on the amount given by FdS donors to North African recipients when there are no SM and no SX donors in the session, of having one additional SM (SX) in the game session. The coefficient in row (10) ((11)) stands for the impact on the amount given by FdS donors to SX recipients when there are no SM and no SX donors in the session, of having one additional SM (SX) in the game session. Standard errors are clustered at the donor level. *, ** and *** indicate significance at the 10, 5 and 1% levels.

Table 12: FdS generosity toward SM and SX recipients when SM and SX numbers increase. Robustness checks.

	Dep. var.: FdS donations to SM and SX		
	(1)	(2)	(3)
(1) FdS → SM	2.369*	2.369*	1.984
	(1.319)	(1.367)	(3.373)
(2) (FdS → SM)*Number of SM	-0.970**	-0.970**	-1.219
	(0.427)	(0.442)	(0.961)
(3) (FdS → SM)*Number of SX	-0.010	-0.010	0.479
	(0.936)	(0.970)	(1.079)
(4) Number of SM	-0.067	0.020	-0.513
	(0.273)	(0.278)	(0.521)
(5) Number of SX	1.480**	0.513	0.740
	(0.623)	(0.681)	(1.104)
(6) Female	0.851*	1.825**	1.479
	(0.418)	(0.656)	(0.947)
(7) Age	0.010	0.007	0.003
	(0.012)	(0.013)	(0.015)
(8) Education	0.151	0.075	0.049
	(0.202)	(0.184)	(0.294)
(9) Household income	-0.101	-0.160	-0.154
	(0.095)	(0.115)	(0.129)
(10) Religiosity	0.346	0.286	0.291
	(0.301)	(0.236)	(0.435)
(11) Knows players from previous sessions	0.550	0.567	1.136
	(0.894)	(1.076)	(1.926)
Face fixed effects	No	Yes	Yes
Average religiosity of SM and SX	No	Yes	No
Out-group salience of other ethno-religious types	No	No	Yes
P-value of the Wald test: (2)+(4)=0	0.01	0.01	0.10
P-value of the Wald test: (5)=0	0.03	0.46	0.51
P-value of the Wald test: (2)+(4)=(5)	0.00	0.04	0.06
R2	0.587	0.653	0.686
Observations	42	42	42

Notes: The table reports OLS estimates. The unit of observation is a dyad formed by a FdS donor and a SM or SX recipient. The dependent variable is categorical. It ranges from 0 (the donor gives nothing to the recipient) to 5 (the donor gives her total endowment to the recipient). "FdS → SM" is a dummy that takes the value 1 if the donor is FdS and the recipient is SM, and the value 0 if the donor is FdS and the recipient is SX. "Number of SM" is equal to the number of SM in the game session. "Number of SX" is equal to the number of SX in the game session. "Female" is a dummy that takes the value 1 if the donor is female and the value 0 otherwise. "Age" is equal to the age of the donor. "Education" is a categorical variable that ranges from 1 (less than primary school completed) to 10 (higher than college degree completed). "Household income" is a categorical variable that ranges from 1 (less than 500 euros monthly) to 11 (more than 7,500 euros monthly). "Religiosity" is a categorical variable that ranges from 1 (never attends religious services) to 7 (attends religious services several times a week). "Knows players from previous sessions" is a dummy that takes the value 1 if the donor knows players who participated in previous game sessions and the value 0 otherwise. The sum of the coefficients in rows (2) and (4) stands for the impact on the amount given by FdS donors to SM recipients when there are no SM and no SX donors in the session, of having one additional SM in the game session. The coefficient in row (5) stands for the impact on the amount given by FdS donors to SX recipients when there are no SM and no SX donors in the session, of having one additional SX in the game session. In column 1, we reproduce the OLS estimates of equation (2). In column 2, we control for the average religiosity of SM and SX players in each game session. In column 3, we control for the effect of the group salience of other ethno-religious types of players. Standard errors are clustered at the donor level. *, ** and *** indicate significance at the 10, 5 and 1% levels.

Table 13: FdS guesses about other FdS generosity toward SM and SX recipients when SM and SX numbers increase. Robustness checks.

	Dep. var.: FdS guesses about FdS donations to SM and SX		
	(1)	(2)	(3)
(1) FdS $\rightsquigarrow$ FdS $\rightarrow$ SM	3.447**	3.447*	3.094
	(1.632)	(1.691)	(2.927)
(2) (FdS $\rightsquigarrow$ FdS $\rightarrow$ SM)*Number of SM	-0.545	-0.545	-0.687
	(0.350)	(0.362)	(0.683)
(3) (FdS $\rightsquigarrow$ FdS $\rightarrow$ SM)*Number of SX	-1.485	-1.485	-0.875
	(1.041)	(1.079)	(1.326)
(4) Number of SM	0.254	0.245	-0.328
	(0.298)	(0.234)	(0.502)
(5) Number of SX	2.780***	0.920	2.119***
	(0.829)	(0.767)	(0.734)
(6) Female	0.997**	1.841***	3.006***
	(0.362)	(0.438)	(0.285)
(7) Age	-0.008	-0.021*	-0.021*
	(0.012)	(0.011)	(0.011)
(8) Education	0.023	-0.203	-0.122
	(0.215)	(0.156)	(0.146)
(9) Household income	0.018	-0.059	-0.087*
	(0.086)	(0.074)	(0.049)
(10) Religiosity	0.352	0.179	0.370**
	(0.286)	(0.155)	(0.139)
(11) Knows players from previous sessions	-1.582**	-0.266	-1.786***
	(0.714)	(0.687)	(0.567)
Face fixed effects	No	Yes	Yes
Average religiosity of SM and SX	No	Yes	No
Out-group salience of other ethno-religious types	No	No	Yes
P-value of the Wald test: (2)+(4)=0	0.35	0.22	0.01
P-value of the Wald test: (5)=0	0.00	0.24	0.01
P-value of the Wald test: (2)+(4)=(5)	0.00	0.15	0.00
R2	0.563	0.751	0.807
Observations	42	42	42

Notes: The table reports OLS estimates. The unit of observation is a triad formed by a FdS guesser, a FdS donor and a SM or SX recipient. The dependent variable is categorical. It ranges from 0 (the guesser guesses that the donor gives nothing to the recipient) to 5 (the guesser guesses that the donor gives her total endowment to the recipient). "FdS $\rightsquigarrow$ FdS $\rightarrow$ SM" is a dummy that takes the value 1 if the guesser is FdS, the donor is FdS and the recipient is SM, and the value 0 if the guesser is FdS, the donor is FdS and the recipient is SX. "Number of SM" is equal to the number of SM in the game session. "Number of SX" is equal to the number of SX in the game session. "Female" is a dummy that takes the value 1 if the donor is female and the value 0 otherwise. "Age" is equal to the age of the donor. "Education" is a categorical variable that ranges from 1 (less than primary school completed) to 10 (higher than college degree completed). "Household income" is a categorical variable that ranges from 1 (less than 500 euros monthly) to 11 (more than 7,500 euros monthly). "Religiosity" is a categorical variable that ranges from 1 (never attends religious services) to 7 (attends religious services several times a week). "Knows players from previous sessions" is a dummy that takes the value 1 if the donor knows players who participated in previous game sessions and the value 0 otherwise. The sum of the coefficients in rows (2) and (4) stands for the impact on FdS guesses about the amount given by FdS donors to SM recipients when there are no SM and no SX donors in the session, of having one additional SM in the game session. The coefficient in row (5) stands for the impact on on FdS guesses about the amount given by FdS donors to SX recipients when there are no SM and no SX donors in the session, of having one additional SX in the game session. In column 1, we reproduce the OLS estimates of equation (3). In column 2, we control for the average religiosity of SM and SX players in each game session. In column 3, we control for the effect of the group salience of other ethno-religious types of players. Standard errors are clustered at the guesser level. *, ** and *** indicate significance at the 10, 5 and 1% levels.

Table 14: Non-FdS generosity toward all ethno-religious types of recipients when SM and SX numbers increase. Robustness checks.

	Dep. var.: Non-FdS donations to all types of recipients		
	(1)	(2)	(3)
(1) non-FdS → SM	-0.791 (0.616)	-0.792 (0.618)	-0.741 (1.569)
(2) (non-FdS → SM)*Number of SM	0.112 (0.252)	0.112 (0.253)	-0.115 (0.350)
(3) (non-FdS → SM)*Number of SX	0.370 (0.338)	0.370 (0.339)	0.704 (0.430)
(4) non-FdS → FdS	-0.530 (0.476)	-0.530 (0.478)	-0.537 (1.528)
(5) (non-FdS → FdS)*Number of SM	0.132 (0.241)	0.132 (0.242)	-0.032 (0.319)
(6) (non-FdS → FdS)*Number of SX	0.126 (0.276)	0.126 (0.277)	0.403 (0.561)
(7) non-FdS → NA	0.051 (0.585)	0.051 (0.587)	-0.779 (1.781)
(8) (non-FdS → NA)*Number of SM	-0.100 (0.287)	-0.099 (0.289)	0.175 (0.372)
(9) (non-FdS → NA)*Number of SX	-0.015 (0.351)	-0.015 (0.352)	-0.291 (0.664)
(10) Number of SM	0.009 (0.241)	-0.001 (0.243)	0.526 (0.474)
(11) Number of SX	-0.245 (0.351)	0.254 (0.355)	-0.224 (0.519)
(12) Female	0.354 (0.237)	-0.201 (0.333)	0.081 (0.373)
(13) Age	0.032** (0.013)	0.034*** (0.012)	0.033*** (0.012)
(14) Education	0.062 (0.047)	0.063 (0.053)	0.049 (0.051)
(15) Household income	0.001 (0.057)	-0.004 (0.053)	-0.003 (0.055)
(16) Religiosity	0.058 (0.058)	0.060 (0.058)	0.065 (0.060)
(17) Knows players from previous sessions	-0.036 (0.275)	-0.014 (0.252)	-0.055 (0.269)
Multiple Imputation Analysis	Yes	Yes	Yes
Average religiosity of SM and SX	No	Yes	No
Group salience of other ethno-religious types	No	No	Yes
P-value of the Wald test: (2)+(10)=0	0.55	0.57	0.32
P-value of the Wald test: (3)+(11)=0	0.71	0.11	0.31
P-value of the Wald test: (5)+(10)=0	0.41	0.41	0.14
P-value of the Wald test: (6)+(11)=0	0.70	0.24	0.60
P-value of the Wald test: (8)+(10)=0	0.67	0.63	0.08
P-value of the Wald test: (9)+(11)=0	0.44	0.48	0.26
P-value of the Wald test: (10)=0	0.97	1.00	0.27
P-value of the Wald test: (11)=0	0.49	0.48	0.67
R2	0.102	0.133	0.156
Observations	354	354	354

Notes: The table reports OLS estimates. The unit of observation is a dyad formed by a non-FdS donor and all of the 4 ethno-religious types of recipients. The dependent variable is categorical. It ranges from 0 (the donor gives nothing to the recipient) to 5 (the donor gives her total endowment to the recipient). "non-FdS → SM" is a dummy that takes the value 1 if the donor is non-FdS and the recipient is SM, and 0 otherwise. "non-FdS → FdS" is a dummy that takes the value 1 if the donor is non-FdS and the recipient is FdS, and 0 otherwise. "non-FdS → NA" is a dummy that takes the value 1 if the donor is non-FdS and the recipient is North African, and 0 otherwise. "Number of SM" is equal to the number of SM in the game session. "Number of SX" is equal to the number of SX in the game session. "Female" is a dummy that takes the value 1 if the donor is female and the value 0 otherwise. "Age" is equal to the age of the donor. "Education" is a categorical variable that ranges from 1 (less than primary school completed) to 10 (higher than college degree completed). "Household income" is a categorical variable that ranges from 1 (less than 500 euros monthly) to 11 (more than 7,500 euros monthly). "Religiosity" is a categorical variable that ranges from 1 (never attends religious services) to 7 (attends religious services several times a week). "Knows players from previous sessions" is a dummy that takes the value 1 if the donor knows players who participated in previous game sessions and the value 0 otherwise. The sum of the coefficients in rows (2) and (10) ((3) and (11)) stands for the impact on the amount given by FdS donors to SM recipients when there are no SM and no SX donors in the session, of having one additional SM (SX) in the game session. The sum of the coefficients in rows (5) and (10) ((6) and (11)) stands for the impact on the amount given by FdS donors to FdS recipients when there are no SM and no SX donors in the session, of having one additional SM (SX) in the game session. The sum of the coefficients in rows (8) and (10) ((9) and (11)) stands for the impact on the amount given by FdS donors to North African recipients when there are no SM and no SX donors in the session, of having one additional SM (SX) in the game session. The coefficient in row (10) ((11)) stands for the impact on the amount given by FdS donors to SX recipients when there are no SM and no SX donors in the session, of having one additional SM (SX) in the game session. In column 1, we reproduce the OLS estimates of equation (5). In column 2, we control for the average religiosity of SM and SX players in each game session. In column 3, we control for the effect of the group salience of other ethno-religious types of players. Standard errors are clustered at the donor level. *, ** and *** indicate significance at the 10, 5 and 1% levels.

Appendix

Table A1: SM and SX generosity toward their in-group when SM and SX numbers increase. OLS analysis.

	Dep. var.: SM and SX donations to their in-group			
	(1)	(2)	(3)	(4)
(1) SM donor → SM recipient	0.711	-0.271	-1.189	-2.065
	(1.367)	(2.642)	(4.129)	(3.011)
(2) (SM donor → SM recipient)*Number of SM	-0.740	-0.733	-0.846	-0.195
	(0.534)	(0.538)	(1.229)	(0.657)
(3) (SM donor → SM recipient)*Number of SX	-0.328	0.383	0.892	0.694
	(0.690)	(1.701)	(2.512)	(1.940)
(4) Number of SM	0.290	0.268	0.381	-0.077
	(0.463)	(0.472)	(1.141)	(0.532)
(5) Number of SX	-0.355	-0.707	-1.006	-0.729
	(0.568)	(1.072)	(2.089)	(1.247)
(6) Female			0.131	0.152
			(0.504)	(0.383)
(7) Age			0.000	0.002
			(0.033)	(0.021)
(8) Education			0.030	0.059
			(0.158)	(0.072)
(9) Household income			-0.052	-0.052
			(0.108)	(0.081)
(10) Religiosity			-0.087	-0.085
			(0.250)	(0.146)
(11) Knows players from previous sessions			0.377	0.516
			(0.900)	(0.460)
P-value of the Wald test: (2)+(4)=0	0.10	0.07	0.22	0.38
P-value of the Wald test: (5)=0	0.54	0.52	0.64	0.56
P-value of the Wald test: (2)+(4)=(5)	0.88	0.83	0.80	0.72
Face fixed effects	No	Yes	Yes	Yes
Multiple Imputation Analysis	No	No	No	Yes
R2	0.512	0.527	0.581	0.600
Observations	27	27	21	27

Notes: The table reports OLS estimates. The unit of observation is a dyad formed by a SM donor and a SM recipient or a SX donor and a SX recipient. The dependent variable is categorical. It ranges from 0 (the donor gives nothing to the recipient) to 5 (the donor gives her total endowment to the recipient). "SM → SM" is a dummy that takes the value 1 if the donor is SM and the recipient is SM, and the value 0 if the donor is SX and the recipient is SX. "Number of SM" is equal to the number of SM in the game session. "Number of SX" is equal to the number of SX in the game session. "Female" is a dummy that takes the value 1 if the donor is female and the value 0 otherwise. "Age" is equal to the age of the donor. "Education" is a categorical variable that ranges from 1 (less than primary school completed) to 10 (higher than college degree completed). "Household income" is a categorical variable that ranges from 1 (less than 500 euros monthly) to 11 (more than 7,500 euros monthly). "Religiosity" is a categorical variable that ranges from 1 (never attends religious services) to 7 (attends religious services several times a week). "Knows players from previous sessions" is a dummy that takes the value 1 if the donor knows players who participated in previous game sessions and the value 0 otherwise. The sum of the coefficients in rows (2) and (4) stands for the impact on the amount given by SM donors to SM recipients when there are no SM and no SX donors in the session, of having one additional SM in the game session. The coefficient in row (5) stands for the impact on the amount given by SX donors to SX recipients when there are no SM and no SX donors in the session, of having one additional SX in the game session. Standard errors are clustered at the donor level. *, ** and *** indicate significance at the 10, 5 and 1% levels.

Table A2: SM and SX generosity toward FdS recipients when SM and SX numbers increase. OLS analysis.

	Dep. var.: SM and SX donations to FdS			
	(1)	(2)	(3)	(4)
(1) SM donor → FdS recipient	-1.422	-1.360	-3.696***	-2.749**
	(1.197)	(1.108)	(1.232)	(1.279)
(2) (SM donor → FdS recipient)*Number of SM	-0.475	-0.506	0.388	-0.152
	(0.388)	(0.367)	(0.587)	(0.503)
(3) (SM donor → FdS recipient)*Number of SX	1.025	1.030*	1.384	1.301**
	(0.612)	(0.563)	(0.931)	(0.602)
(4) Number of SM	0.457**	0.475***	0.208	0.245
	(0.192)	(0.170)	(0.491)	(0.267)
(5) Number of SX	-0.855*	-0.562	-0.776	-0.678
	(0.486)	(0.474)	(1.034)	(0.483)
(6) Female			0.423*	0.443*
			(0.223)	(0.235)
(7) Age			-0.032*	-0.006
			(0.017)	(0.016)
(8) Education			0.059	0.008
			(0.075)	(0.061)
(9) Household income			-0.087	-0.040
			(0.067)	(0.052)
(10) Religiosity			0.008	-0.107
			(0.121)	(0.100)
(11) Knows players from previous sessions			0.395	0.478
			(0.450)	(0.371)
P-value of the Wald test: (2)+(4)=0	0.96	0.92	0.09	0.77
P-value of the Wald test: (5)=0	0.09	0.25	0.46	0.17
P-value of the Wald test: (2)+(4)=(5)	0.17	0.37	0.23	0.17
Face fixed effects	No	Yes	Yes	Yes
Multiple Imputation Analysis	No	No	No	Yes
R2	0.218	0.294	0.411	0.384
Observations	81	81	63	81

Notes: The table reports OLS estimates. The unit of observation is a dyad formed by a SM donor and a FdS recipient or a SX donor and a FdS recipient. The dependent variable is categorical. It ranges from 0 (the donor gives nothing to the recipient) to 5 (the donor gives her total endowment to the recipient). "SM → FdS" is a dummy that takes the value 1 if the donor is SM and the recipient is FdS, and the value 0 if the donor is SX and the recipient is FdS. "Number of SM" is equal to the number of SM in the game session. "Number of SX" is equal to the number of SX in the game session. "Female" is a dummy that takes the value 1 if the donor is female and the value 0 otherwise. "Age" is equal to the age of the donor. "Education" is a categorical variable that ranges from 1 (less than primary school completed) to 10 (higher than college degree completed). "Household income" is a categorical variable that ranges from 1 (less than 500 euros monthly) to 11 (more than 7,500 euros monthly). "Religiosity" is a categorical variable that ranges from 1 (never attends religious services) to 7 (attends religious services several times a week). "Knows players from previous sessions" is a dummy that takes the value 1 if the donor knows players who participated in previous game sessions and the value 0 otherwise. The sum of the coefficients in rows (2) and (4) stands for the impact on the amount given by SM donors to FdS recipients when there are no SM and no SX donors in the session, of having one additional SM in the game session. The coefficient in row (5) stands for the impact on the amount given by SX donors to FdS recipients when there are no SM and no SX donors in the session, of having one additional SX in the game session. Standard errors are clustered at the donor level. *, ** and *** indicate significance at the 10, 5 and 1% levels.