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Which social categories matter to people: An experiment

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Abstract: *Social categories matter to people, but it is not obvious ex ante which ones matter more. To explore this, we conduct a novel experimental market of anonymous partners based on social categories. Participants have the option of choosing or discarding a peer according to their gender, ethnicity, and religion. Our research design allows us to explore whether individuals prioritize social categories when selecting a peer and whether the order in which social categories are prioritized is context dependent. Considering both free and costly decisions, two economic contexts are evaluated: donations (dictator game) and investments (risk game). We find that when selecting a partner, gender appears to be the dominant social category across different conditions, with subjects exhibiting sharp preferences for being matched with a female partner. However, the partner's religion gains prominence as a requested social category when prejudices about social group decision making become relevant to their own payoffs. Finally, we find that selecting some social categories seems to have economic consequences both by increasing economic donations and, in particular, by encouraging investments.*

JEL classification: C91, D01, D91, J15, J16

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1. INTRODUCTION

People pay a great deal of attention to social categories. Accordingly, social categories influence who people choose as friends, as well as their hiring and voting decisions (Rhodes and Baron, 2019). In fact, social-identity theory suggests that group identity can help to explain intergroup behavior (Tajfel et al., 1971; Tajfel and Turner 1979). Although social categorization in a modern society involves many different dimensions (e.g., political affiliation, caste, language, nationality, age, migrant status, organizational identity, sports team allegiance, art preference, etc.), not all social categories are equally relevant when interacting with others. We can therefore ask whether some social categories are more prominent or salient than others. The answer to this question is particularly relevant in a globalized and segmented world. Since social categories include a broad range of social and behavioral consequences, a better understanding of how and to what extent people rank social identities could be valuable in guiding policy makers in the design of effective policy interventions in multiple institutional settings.

We are particularly interested in examining those identities whose social dimensions are both salient and close to universal, that is, gender, ethnicity, and religion. Evidence from social, developmental, and evolutionary psychology suggests that how and whether we prioritize certain social identities over others appears unresolved (Kinzler et al., 2010). To this aim, we present the results of an exploratory analysis that attempts to evaluate the hierarchy of social categories. In particular, we design a laboratory experiment to reproduce a *market of anonymous partners based on social categories* (gender, ethnicity, and religion) in which participants have the option of either choosing or discarding – depending on the treatment – a partner according to their social identity. Since one's identity is naturally multifaceted (Charness and Chen, 2020), people can feel that they belong to several groups at the same time, for instance, female (gender) and Asian (ethnicity). In this vein, this design also allows subjects the option of selecting a partner based on one, two or three social categories.

In addition, since individuals can be flexible, adaptative, and context-dependent in terms of prioritizing social categories (Sidanius and Pratto, 1999; Bernstein, Young, and Hugenberg, 2007), for the sake of robustness, we replicate the same experimental conditions in two different economic contexts: donations and risk investments. This variability allows us to test which aspects

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of identity are context dependent and which aspects are not. This is a crucial issue that has been largely ignored in the literature (Charness and Chen, 2020).

Akerlof and Kranton (2000) introduced the concept of social identity into economics. They propose a utility function where identity is associated with different social categories and people behave in particular ways within them.[1] Since their seminal work, considerable experimental evidence has shown that social identity, even if totally arbitrary and temporary, often leads to group bias in decisions involving different groups, i.e., people interact with ingroup and outgroup members differently. Li (2020) recently surveyed this economic literature on group identity and intergroup bias in both natural and induced (artificial) social identities.[2] With some exceptions, she finds that group identity leads to ingroup favoritism and outgroup discrimination in a broad range of economic domains.[3] Shayo (2020) also reviews evidence that individuals associate themselves or identify with groups in two fundamental ways: ingroup bias and conformity to group norms. Lane (2016), in a meta-analysis investigating discrimination between groups in experiments, finds that the strength of discrimination depends upon the type of group identity under examination and is stronger when identity is artificially induced.

In a parallel and often-convergent research domain, there is broad evidence that both taste-based and statistical discrimination exist (Bertrand and Duflo, 2017; Lane, 2016; Li, 2020, Shayo, 2020). Taste-based discrimination, proposed by Becker (1957), implies that individuals gain utility in the mere act of discriminating against outgroups. However, in statistical discrimination, beginning with Arrow (1973), any differential treatment of members of one group reflects a simplified and standardized perception of that particular group. While experimental research offers new approaches to better differentiate between taste-based and statistical discrimination, this challenge for differentiation remains. In order to contribute to this literature, we test experimentally for group biases present in the dictator game (where there are no strategic issues) as evidence of

[1] This model has been applied to examine gender discrimination, poverty, social exclusion, and labor division within households, investment in human capital, contract theory (Akerlof and Kranton 2000, 2002, 2005), redistributive policies (Shayo 2009), and bargaining (Smith 2012). Other complementary theoretical models have highlighted the endogenous choices of individuals and investments in identities (Fang and Loury 2005; Bénabou and Tirole 2011; Akerlof 2016; Bernard et al. 2016).

[2] Charness and Chen (2020) also review this literature and present the main approaches, findings, and open questions in identity economics.

[3] Balliet, Wu and de Dreu (2014), in a meta-analysis of 212 studies in cooperation, also find support for ingroup favoritism, but no evidence for outgroup discrimination.

taste-based discrimination. Similarly, the group biases prevalent in the risk game, where subjects' decisions may be affected by their expectations about how responders will react, can be interpreted as evidence involving statistical discrimination. Fershtman and Gneezy (2001) have previously used similar games to study different aspects of discrimination based on ethnicity.

To the best of our knowledge, no previous experimental work has measured the effects of group identity on participants' social preferences by directly offering to subjects the option of choosing or discarding anonymous partners according to their Gender, Ethnicity, and Religion at the same time. There are examples in the literature where subjects, when given the option, choose partners based on one social category (Holm and Engseld, 2005; Slonim and Garbarino, 2008; Slonim and Guillen, 2010; Chuah et al., 2016), but as far as we know, this is the first study where subjects are able to choose among different social categories, allowing us to analyze whether some of them are more relevant than others. In this vein, the novelty of this experimental design lies in providing participants with one relevant tool to create a natural "market of social categories". This tool is the option to select a partner to play with from within a great variety of social identities.

In our analysis, we find evidence supporting the idea that individuals prioritize social categories. When selecting an anonymous partner with whom to be matched, *Gender* appears to be the dominant social category across different benchmarks (either choosing or discarding; either with costly or free decisions).[4] However, *Religion* also acquires relevance when individuals' own payoffs are at stake; prejudices toward social group decision-making (statistical discrimination) may also play a role. These results also confirm that the selection of social categories is context-dependent.

Interestingly, we find that *Gender* dominance is driven by individuals mostly opting for a female partner. In line with our results, studies on altruism in the social-psychology literature find that women receive more help than men (see Eagly and Crowley, 1986; Pearce and Amato, 1980 for reviews). Other studies also find that women are more likely than men to benefit from gender discrimination when decisions involve helping others (Gueguen and Fischer-Lokou, 2004; Rabinowitz et al., 1997; Harris, 1992). Slonim and Guillen (2010) argue that if people in these

[4] These empirical findings are consistent with theories on social hierarchies suggesting that gender is a more stable, universal, and ancient category (Sidanius & Pratto, 1999).

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studies believe women are more disadvantaged than men, then this evidence might be consistent with the economics literature on inequity aversion and other-regarding preferences.[5] In an investment ('trust') game with results similar to ours, Buchan et al. (2008) found that women are more trustworthy than men. In addition, we observe that when *Religion* is a key social category, individuals avoid being partnered with an atheist. In this context (and contrary to most of the experimental literature that suggests participants tend to favor ingroup at the expense of outgroup), we observe strong outgroup favoritism in relation to *Religion*. Moreover, subjects were more willing to pay a cost to select social categories in the risk game than in the dictator game.

Finally, as a test of robustness, we conduct an additional treatment in which participants, rather than choosing or discarding a partner based on social categories, can merely ask about the *Gender*, *Ethnicity*, and *Religion* of the partner with whom they have *already* been randomly paired. If, for instance, a participant wishes to know whether their partner is Asian, they receive the binary answer "yes" if their partner is Asian and "no" otherwise. These additional results seem to confirm our previous findings: the hegemony of *Gender* as a key social category, and the importance of *Religion* as a strategic social category. Of course, these results may well reflect these particular games,[6] but the games do capture the preferences of social categories in situations of altruism and trust, which are central in behavioral economics.

We find that having the opportunity to select a partner (based on social categories) has economic consequences.[7] When a subject selected a partner, both economic donations and investments (in the respective treatments) increased. The increase in investments also seems robust across a wide range of contexts.

[5] On the contrary, Lane (2016) reported that there is significant out-group favoritism regarding gender in dictator experiments.
[6] While the dictator game is not really a game, here and elsewhere we follow the literature on this terminology.
[7] There are parallels to the literature on selecting an institution. For example, Babcock *et al.* (2015) find that performance improves considerably for people who have chosen the condition compared to those who were assigned the condition, even though 97% of the subjects who could choose voluntarily chose the condition to which the other subjects were automatically assigned.

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2. EXPERIMENTAL DESIGN

2.1 Treatments

In order to study discretionary discrimination from two different angles, we consider both Positive and Negative treatments. In each, participants face five different tasks where the number of decisions and their costs vary. The following is a detailed explanation of the treatments and tasks. Table 1 reports the types that participants may select in each social category.

Table 1: Social identity categories and types used in the experiment

Social Category	Types per category
Gender	Male, Female
Ethnicity	Black, White, Asian, Other
Religion	Christian, Muslim, Hindu, Buddhist, Atheist, Other

- *Positive Treatment*: Participants have the option of *choosing* up to three social categories (Gender, Ethnicity, and Religion) regarding their partner. If, for instance, one chooses Gender, one must subsequently choose one particular type, male or female. If, for instance, a participant chooses male, then the partner will be male.

- *Negative Treatment*: Participants have the option of *discarding* up to three social categories, Gender, Ethnicity, and Religion. If, for instance, a participant discards *Ethnicity*, they must then discard one particular type, White, Black, Asian, or Other. If, for instance, a participant then discards white, then the partner will not be white.

In both treatments, participants are faced with the same five tasks, as follows:

- *Task 0*: Participants have no option of selecting any social category. Random matching.

- *Task 1*: Participants receive an extra show-up fee of £0.50 in cash at the end of the experiment; they have the option of spending that extra money selecting one social category of their partner (costly selection task).

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- *Task 2*: Similar to Task 1 but the extra show-up fee is £1.00 and participants have the option of selecting up to two different social categories of their partner. Each social category selection costs £0.50 (costly selection task).

- *Task 3*: Similar to Task 2 but the extra show-up fee is £1.50 and participants have the option of selecting up to three different social categories of their partner (costly selection task).

- *Free Task 3*: Participants have the option of selecting, with no cost, up to three different social categories (free selection task).

Those participants who do choose or discard some social categories are randomly matched with subjects from a subsample composed of those who possess or lack the selected categories. Those participants who do not select any social category are randomly matched with subjects from the whole subject pool.

As the issue of the selection is relevant, we reproduce here part of the instructions regarding this decision (for Dictator game, task 1):[8] *For this experiment you will receive a show-up fee of £3.50 in cash at the beginning of the experiment; and you can spend £0.50 from your show-up fee to select one characteristic of the Player B you will be paired with from the following categories:*

- Gender: Male/Female

- Ethnicity: Black, White, Arab, Asian, Other

- Religion: Christian, Muslim, Buddhist, Jew, Atheist, Other

Therefore, if, for instance, you decide to spend £0.50 from your show-up fee and select the characteristic Male, then, the Player B you will be randomly paired with will proceed only from the subsample composed by Male Players B. In case you would select a characteristic that is not present in the sample, you could select a different one. If you want to spend £0.50 from your show-up fee and select one characteristic of the Player B you will be paired with, please select below the characteristic:

Characteristic: _____

You have to make a proposal. My proposal: _____

[8] See the Appendix for a complete description of these instructions.

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2.2 Games

Our experimental setting consists of two different experimental games: dictator and risk. These games allow us to explore whether the economic framework (i.e., altruistic decisions connected to taste-based discrimination or investment choices associated with statistical discrimination) plays a role on the hierarchization of social categories.

Dictator Game (DG): Based on Eckel and Grossman (1996) and Hoffman, McCabe and Smith (1996), one participant in the role of "dictator", player A, determines how to split an endowment of £10 between themself and another participant, player B.

Risk Game (RG): Originally designed by Berg, Dickhaut and McCabe (1995) and termed "the Investment Game", this version is based on Bohnet and Zeckhauser (2004). We focus on a binary choice in which two participants receive an endowment of £10. One participant in the role of "trustor", player A, can choose between sending this money or not to the other participant in the role of "trustee", player B. If the money is sent, then it will be tripled by the experimenter. Next, the trustee has the option of sending back to the trustor any amount of money (in quantities divisible by 5).

We highlight that all the participants in the experiment were players A. Their counterparts, players B, were chosen from a subject pool of participants who had taken part in previous sessions of dictator and risk games and were asked, in a post-experimental questionnaire, information about age, studies, gender, ethnicity, and religion. In the dictator game, players A were told that their decisions would have a direct impact on player B's earnings. Players B would then visit the experimental lab some days later to collect the money, if any, to be shared with them by players A.[9] In the risk game, players A were informed that their decisions would be matched with participants' decisions in a similar previous experiment. That is, they were informed that their decisions would only affect their own earnings (players B wouldn't receive any extra payment). In this manner, the decisions of all players A across the games were relevant and crucial to determining their own earnings.

[9] During the online registration, all participants could check that the experiment involved many sessions across several days. Players B in the earliest sessions were asked to pass by the lab with a code to collect some additional money some days later. Most players B dropped by the lab. In addition, the significant number of donations from players A shows that our statement was believed by many participants.

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The group biases in our dictator game, where there is no room for any strategic concern, can be interpreted as evidence for taste-based discrimination. The group biases in the risk game, where subjects' decisions may be affected by views about how their player B behaved, can be interpreted as clear evidence for statistical discrimination. Although taste-based discrimination cannot be completely excluded in our risk game, the fact that players A know that their final earnings (if they decide to invest) depends on the decision of some player B who is neither directly nor financially involved in the game, highlights the role of views about social categories (statistical discrimination) and should serve to minimize the role of taste-based discrimination.

2.3 Procedures

The experiment was programmed in LIONESS (Giamattei, Yahosseini, Gächter, and Molleman, 2019) and conducted in the Laboratory of the Centre for Decision Research and Experimental Economics at the University of Nottingham, United Kingdom. A total of 480 undergraduates from various disciplines participated in the experiment. Before the start of the experiment, participants were fully informed about the type of experiment and told that they would be rewarded according to their performance. Participants were required to provide written informed consent before the experiment began. Participants privately read the instructions (see the Appendix) and their questions were answered privately. They were also asked to answer control questions to ensure that they understood the instructions. Payment took place privately and participants had to leave the laboratory as soon as they were paid.

Our players B were selected from a subject pool of participants who had taken part in previous sessions of the dictator and risk games conducted at the University of Nottingham one week previously.

In the dictator game, participants were divided into two groups: i) A first group of 120 subjects played Task 0 and then Tasks 1, 2, 3 and free in the Positive treatment; and ii) a second group of 120 subjects participated in the Negative treatment. Similarly, in the risk game, participants were divided into two groups: i) In the Positive treatment, a group of 120 subjects played under the conditions of Tasks 0, 1, 2, 3 and free; ii) and another group of 120 subjects participated in the Negative treatment. To avoid order effects, the sequence of tasks in both games was completely randomized.

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3. RESULTS

3.1 Social decision making

In this section, we first analyze how many participants care about selecting a partner based on a social category. Then we examine how these social categories are prioritized in both the Positive and Negative discrimination treatments. In order to shed light on the resulting hierarchies of social categories, we also explore whether they are mainly driven by any particular group of subjects. In addition, we investigate whether within each social category there is some type of identity that is crucial to determining the hierarchical order. Finally, we study how ingroup and outgroup discriminatory behavior changes across games and treatments. Throughout this section, to ensure that our results are not biased by oversampling, we report p-values associated with bootstrapped standard errors using 200 replications., unless stated otherwise.

3.1.1 Selection of social categories

Where subjects are allowed to choose or discard an anonymous partner based on social categories, how many subjects make use of this option? Table 2 describes the percentage of subjects who selected at least one social category, breaking this down by games, treatments, and task cost. We consider that the selection of a partner's social category to positively or negatively discriminate is only relevant if subjects transfer a positive amount of money.[10] Thus, for this and the subsequent analysis, we only consider subjects who made a positive transfer to their partners.[11]

In Table 2 (and thereafter), Costly columns represent data from the three costly selection tasks (Task 1, 2 and 3), and the free columns refer to data from the free selection task. As can be seen, a noticeable percentage of subjects, ranging from 36% to 71%, cared about social categories and chose at least one to select their partner. This interest in selecting social categories was robust and consistent across treatments and games.

Table 2. Percentage of subjects who selected at least one social category

[10] As a reminder, in total, 480 subjects were divided into four equal groups of 120 subjects. Apart from Task 0, each group played four rounds (three costly and one free) in one of the following combinations of a game and treatment (dictator, positive; dictator, negative; risk, positive and risk, negative). Of all 480 subjects in the free round, 50 (27 in the dictator game and 23 in the risk Game) or 10.4% did not share any amount but selected a category in the free round. Of the 1440 costly rounds (480 subjects X 3 costly rounds), there were 135 (49 in the dictator game and 86 in the risk game) instances or 9.38% of all subject rounds where subjects did not transfer money but selected a social category.

[11] The proportions if we include all subjects instead are similar but they are of course slightly lower.

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Treatment	**Costly**		**Free**	
	Dictator	*Risk*	*Dictator*	*Risk*
Positive	0.561	0.626	0.714	0.671
Negative	0.358	0.536	0.506	0.630

Table 3 displays the percentage of times that social categories were selected; the corresponding percentages are displayed by task in Appendix Table A1. As expected, more social categories were selected when it was free, although this effect is relatively modest.[12] Our analysis of the free round shows no significant difference in the percentage of times social categories were selected when comparing by game either in the Positive or the Negative treatment (respective t-tests: 0.714 vs. 0.671, p = 0.526; 0.506 vs. 0.630, p = 0.117). The only significant difference we find is that subjects selected

a higher percentage of social categories in the dictator game in the Positive treatment than in the Negative one (0.714 vs. 0.506, p = 0.005).

Table 3. Percentage of times in which social categories were selected

Treatment	*Costly*		*Free*	
	Dictator	*Risk*	*Dictator*	*Risk*
Positive	0.391	0.525	0.714	0.671
Negative	0.211	0.389	0.506	0.630

This result is supported when we consider the costly tasks. The Positive treatment generated a higher percentage of choices than the Negative one both in the dictator (0.391 vs. 0.211, p = 0.000) and in the risk game (0.525 vs. 0.389, p = 0.009). That is, subjects revealed a higher willingness to pay in order to positively favor a partner than to negatively discriminate against them. In this respect, *discarding* a partner based on some social category seems to have an additional non-monetary cost for subjects.[13]

On the other hand, we also found that social categories were selected a significantly greater percentage of times in the risk game compared to the dictator game both in the Positive and

[12] This result holds in the dictator-positive condition (0.391 vs 0.714, p = 0.000), in the risk-positive condition (0.525 vs 0.671, p = 0.027), in the dictator-negative condition (0.211 vs 0.506, p = 0.000), and in risk-negative condition (0.389 vs 0.630, p = 0.001). Throughout this paper, we round p-values to three decimal places.

[13] This seems more personal and also brings in the notion of loss versus gain. In addition, there are papers (e.g., Sokolova and Krishna, 2016) that analyze the cognitive process, finding that choosing and rejecting are not interchangeable and that rejecting implies more consideration and deliberation.

Negative treatment (0.391 vs. 0.525, p = 0.002; 0.211 vs. 0.389, p = 0.000). In the dictator game, subjects are not uncertain about their final earnings. In this respect, selecting a social category – based on a taste for discrimination – does not affect a subject's certainty about final earnings. However, in the risk game (similar to Houser et al, 2010), subjects know that if they decide to invest, their final earnings will be determined by the decisions their matched participant made in the previous experiment.

Thus, by choosing or discarding some social characteristics – based on statistical beliefs about social groups – subjects may expect to alter the probabilities of a successful investment, making the selection of a category much more relevant than in the dictator game. In other words, the greater number of selections of social categories in the risk game may suggest that, perhaps reassuringly, subjects exhibit a higher willingness to pay when they can discriminate statistically than when discrimination is taste-based. It is worth noting that the observed higher willingness to pay to discriminate in the risk game may also be affected by the higher variation in payoffs.

3.1.2 Hierarchy of social categories

This subsection examines how participants prioritize some social categories over others and, secondly, analyzes whether the resulting hierarchy is context dependent. We verify whether and to what extent the hierarchies of social categories based on taste-based preferences (dictator game) are significantly different from those based on statistical-based preferences (risk game).

Table 4 and Figure 1 display the percentage distribution of selected social categories based on individual decisions, where the selection of social categories includes both game and cost. In the dictator game, where taste-based discrimination may play a role, Gender emerges as the most demanded social category. In the Positive discrimination treatment, statistical tests show significant differences between Gender and Ethnicity in both costly and free tasks, respectively (0.522 vs. 0.200, p = 0.000; 0.412 vs. 0.269, p = 0.000); and between Gender and Religion, although only weakly significant when choosing was free (0.522 vs. 0.278, p = 0.000; 0.412 vs. 0.319, p = 0.061). Religion only slightly exceeds Ethnicity as the second most demanded social category. However, these differences are not significant in the costly tasks (0.200 vs. 0.278, p = 0.143), but are significant in the free task (0.269 vs. 0.319, p = 0.040).

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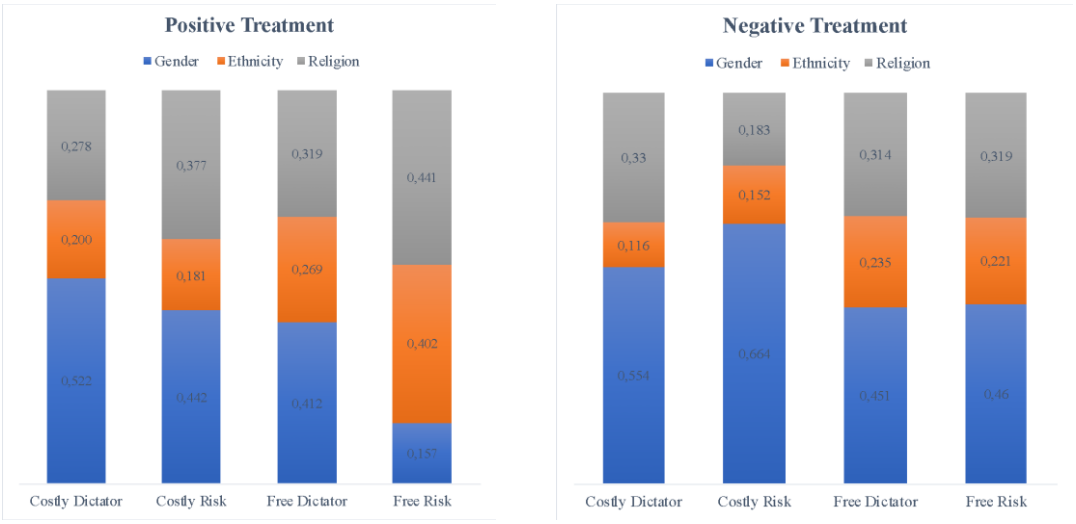
Table 4. Percentage distribution of choices across social categories

Treatment		Costly		Free	
		Dictator	*Risk*	*Dictator*	*Risk*
Positive	Gender	0.522	0.442	0.412	0.157
	Ethnicity	0.200	0.181	0.269	0.402
	Religion	0.278	0.377	0.319	0.441
Negative	Gender	0.554	0.664	0.451	0.460
	Ethnicity	0.116	0.152	0.235	0.221
	Religion	0.330	0.183	0.314	0.319

Figure 1. Hierarchy of social categories



We now turn our attention to the emerging hierarchies when expectations about social group decision making may play a role. In the risk game, and for the case of positive discrimination, Religion emerges as a key social category. While in the costly tasks, Gender no longer significantly exceeds Religion (0.442 vs. 0.377, p = 0.341), in the free task Religion remarkably surpasses Gender in relevance when choosing a partner (0.157 vs. 0.441, p = 0.001). It is also observed that while in the costly tasks Ethnicity is the least required social category (Religion vs. Ethnicity: 0.377 vs. 0.181, p = 0.001; and Gender vs. Ethnicity: 0.442 vs. 0.181, p = 0.000), in the free task Ethnicity competes in prominence with Religion (0.402 vs. 0.441, p = 0.372), downgrading Gender to the least requested social category (Gender vs. Ethnicity: 0.157 vs. 0.402, p = 0.004).

Our results indicate that, regarding positive discrimination, subjects not only place emphasis on their partner's social categories but also adapt their discriminatory decisions to the

economic context. When subjects decide their own final payoff and one's choice is exclusively based on taste, Gender seems to be the key social category. However, when the final payoffs depend on one's counterpart's decision as well as beliefs about probable social group actions, Religion and, to some extent, Ethnicity also become relevant social categories. In short, the importance that individuals allocate to social categories is context dependent. These findings are robust to the inclusion of controls using a series of multinomial logit specifications, where parameter estimates are computed separately for those who selected up to one, two or three categories; predictive probability margins by game and cost structure are computed and displayed in Appendix graphs A1-A3.

Regarding the Negative discrimination treatment, in which subjects can discard partners based on social categories, Gender again ranks as the most relevant social category. Statistical tests show significant differences between Gender and Ethnicity under costly and free tasks, respectively (0.554 vs. 0.116, $p = 0.000$; 0.451 vs. 0.235, $p = 0.002$), and between Gender and Religion but this is only significant in the costly tasks (0.553 vs. 0.330, $p = 0.056$), not in the free task (0.451 vs. 0.314, $p = 0.152$). Religion again seems to exceed Ethnicity as the second most selected social category. However, these differences are only significant in the costly tasks (0.116 vs. 0.330, $p = 0.002$) and not in the free task (0.235 vs. 0.314, $p = 0.134$).

With negative discrimination, we observe that in the risk game, Gender again dominates the rank of social categories. Statistical tests show significant differences between Gender and Ethnicity (0.664 vs. 0.152, $p = 0.000$ and 0.460 vs. 0.221, $p = 0.001$ in costly and free tasks, respectively) and between Gender and Religion, although this is only significant when choosing implied a cost (0.664 vs. 0.183, $p = 0.000$; 0.460 vs. 0.319, $p = 0.126$). Again, Religion was the second most requested social category, although differences with Ethnicity are not significant in the costly rounds (0.152 vs. 0.183, $p = 0.544$) and only weakly significant in the free rounds (0.221 vs. 0.319, $p = 0.084$). These findings are robust to the inclusion of controls using a series of multinomial logit specifications, where parameter estimates are computed separately for those who selected up to one, two or three categories; graphs showing predictive probability margins by game and cost structure are displayed in Appendix A4-A6.

Under conditions with negative discrimination, the prevalence of Gender for both taste-based and statistical preferences might be partially explained by the fact that Gender is a binary

category and there is no room for uncertainty, i.e. discarding a particular one automatically implies being matched with the other. When selecting either Religion or Ethnicity, on the other hand, subjects cannot know their partner's social categories.

In summary, the importance of Gender as the most demanded social category across treatments, games, and cost conditions is only challenged by Religion in the risk-positive condition, where the uncertainty of their own payoffs and prejudices about social group decision making seem to play a role. In that case, participants mainly opted for Religion as a way to raise the probability of getting a successful investment.

Is there any particular group or social identity that drives this hierarchy of social categories?

We next focus on examining whether this hierarchy of social categories is driven by any particular group of subjects in our sample.[14]

Table 5. Marginal effects estimation of a Logit Model by social categories

Logit Models	Dictator Pos.	Risk Pos.	Dictator Neg.	Risk Neg.
	Gender	Religion	Gender	Gender
	(1)	(2)	(3)	(4)
Free Round	0.40***	0.30***	0.29***	0.21***
	(0.05)	(0.06)	(0.06)	(0.06)
Female	-0.08	-0.04	-0.01	-0.08
	(0.06)	(0.07)	(0.05)	(0.08)
Asian	0.20**	-0.02	0.01	-0.17
	(0.10)	(0.09)	(0.07)	(0.13)
White	-0.01	0.07	0.01	-0.07
	(0.10)	(0.12)	(0.07)	(0.11)
Christian	0.14	0.15	0.02	0.03
	(0.09)	(0.11)	(0.07)	(0.11)
Atheist	0.14**	0.16	0.06	0.13
	(0.08)	(0.13)	(0.08)	(0.13)
High-belief	0.04	-0.01	-0.00	-0.04
	(0.10)	(0.09)	(0.07)	(0.09)
Conservative	0.01	0.02	-0.01	-0.04***
	(0.02)	(0.02)	(0.02)	(0.02)
Observations	388	295	348	284

We report marginal effects in logit models by game (dictator, risk) and treatment (positive, negative). The sample is limited to those who shared a positive amount. In (1), (3), and (4), the dependent variable is 1 if the individual chose Gender and 0 otherwise (i.e. Ethnicity, Religion, and none). In (2), the risk-positive condition, the dependent variable is 1 if the individual chose Religion and 0 otherwise. All specifications include a female dummy, three ethnicity dummies (Asian, White, Other), three religion categories (Christian, Atheist, Other), two intensity of religion categories (High-belief, Low-belief), and two political categories (Conservative, Liberal). Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

[14] See Figure A7 in the Appendix for a sample distribution by identity within each social category.

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In order to examine whether some groups are more likely to choose or discard the most demanded social category, we perform a marginal-effects estimation of a logit model separately by game (dictator, risk) and treatment (positive, negative), reported in Table 5.[15] As before, the sample is limited to participants who shared a positive amount. In all specifications except for risk-positive, the dependent variable is 1 if the individual chose Gender and 0 otherwise (i.e. Ethnicity, Religion, and none). For the risk-positive condition, the dependent variable is 1 if the individual chose Religion and 0 otherwise. To ensure covariates that are categorical variables have a sufficient number of observations per category, in each specification we include a female dummy, three ethnicity dummies (Asian, White, Other), three religion categories (Christian, Atheist, Other), two intensity of religion categories (High-belief, Low-belief), and two political categories (Conservative, Liberal). Standard errors are clustered at the individual level to account for potential serial correlation within subjects.

In Table 5, models (1), (3), and (4) show that the greater demand of Gender over other social categories is not always driven by any particular group pattern. While in the dictator-positive framework, model (1), some groups such as Asian and Atheist are more likely to choose Gender, in the dictator-negative condition, model (3), no group chooses Gender significantly more. In the risk-negative condition, model (4), Conservatives are less likely to select Gender. Similarly, in the risk-positive condition, model (2) shows that the relevance of Religion is not primarily driven by any particular group of subjects.

In sum, Table 5 shows that the domain of Gender has not been driven by the insistence of any particular group. In this vein, the consensus on Gender seems broad and diverse. Regarding the lead of Religion in the risk-positive condition, results do not show any particular group effect.

We now examine whether within each social category there was some type of social identity that was especially favored over others. Table 6 displays the percentage distribution of identities chosen and discarded within each social category. Mean 1 and 2 refer to the percentage distribution of the first and second term in the second column respectively.

[15] See Appendix Tables A2 (A3) for corresponding estimates in positive (negative) treatments by game for each of the three social categories.

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Table 6. Percentage distribution of identities within each social category

Treatment	Identities (1/2)	Dictator			Risk		
		Mean 1	*Mean 2*	*p-value*	*Mean 1*	*Mean 2*	*p-value*
Positive	*Female/Male*	0.72	0.28	0.000***	0.67	0.33	0.002***
	Christian/Atheist	0.39	0.16	0.002***	0.39	0.05	0.000***
	Christian/Other	0.39	0.45	0.531	0.39	0.56	0.091*
	Atheist/Other	0.16	0.45	0.000***	0.05	0.56	0.000***
	Asian/White	0.30	0.38	0.298	0.51	0.21	0.002***
	Asian/Other	0.30	0.32	0.803	0.51	0.28	0.013**
	White/Other	0.38	0.32	0.496	0.21	0.28	0.349
Negative	*Female/Male*	0.30	0.70	0.000***	0.22	0.78	0.000***
	Christian/Atheist	0.19	0.48	0.015**	0.07	0.40	0.000***
	Christian/Other	0.19	0.33	0.126	0.07	0.53	0.000***
	Atheist/Other	0.48	0.33	0.241	0.40	0.53	0.294
	Asian/White	0.18	0.39	0.131	0.27	0.22	0.662
	Asian/Other	0.18	0.42	0.064*	0.27	0.51	0.056*
	White/Other	0.39	0.42	0.849	0.22	0.51	0.025**

As seen in Table 6, Female is chosen substantially more and discarded less than Male, both in the dictator game, when taste-based preferences might play a role, and in the risk game, when statistical-based preferences are also relevant. In this respect, it is worth highlighting that the reason why *Gender* emerged as the dominant social category across three different conditions is because subjects overwhelmingly requested a woman or discarded a man as a partner.

However, in the risk-positive condition, where *Religion* is the most demanded social category, Table 6 shows that subjects mostly preferred that the decision determining their final earnings came from a trustee belonging to some faith (atheists were significantly less chosen than Christians and others). This result is in line with Anderson et al. (2006) and Mueser (1999), who observe that more religious people are generally believed to be trustworthier; and with Chuah et al. (2016), who find that religious and non-religious participants in an experiment believe that those belonging to some faith are more trustworthy. Similarly, we also observe a greater preference for trustees belonging to some faith in the risk-negative condition, with subjects avoiding an atheist partner.[16]

[16] Regarding Ethnicity, it can be observed that Asians are the most trusted in the risk game, and the least discarded in the dictator game.

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In sum, Table 6 reports that the domain of Gender as a social category is primarily driven by participants opting for a female partner. Besides, it shows that when Religion is a key social category, individuals mostly prefer to avoid an atheist as a partner.

3.1.3 Ingroup and outgroup biases

This subsection examines how group membership affects behavior and how the impact of this manifests itself as ingroup and/or outgroup biases. Within each social category, Table 7 displays the percentage distribution of how subjects selected a partner based on the group identity effect. Costly and free rounds were combined in order to ensure there was a sufficiently large sample size for each of the two subgroups (in/out-group)[17]. Table 7 reports two main results: first, regarding Gender, we find no group biases, and second, participants selecting Religion show outgroup favoritism (in the Positive treatment) and outgroup discrimination (in the Negative treatment) in both games. That is, although subjects tend to choose their partners based on some *Religion*, contrary to Chua et al. (2016), they exhibit sharp preferences for a co-player with a different faith. While religious subjects prefer religious partners, it seems that they primarily prefer to choose those from a different faith; however, participants are more likely to discard one out of five religious outgroups than their own religious group identity.[18]

While most of the experimental literature confirms the initial finding by Tafjel et al. (1971) that participants tend to favor ingroup at the expense of the outgroup, we do not find such behavioral pattern in the Positive treatment.[19] This novel result might be explained by the experimental design whereby participants choose from a broad range of ethnicities and religious identities. In relative terms, the weight of one's religious group is reduced. On the contrary, the Negative treatment confirms the standard result of outgroup discrimination. However, in this

[17] This is particularly important for the negative treatments where sample sizes are small. For transparency and consistency, Table A6 reports the results for Table 7 by cost structure and includes the p-values with and without bootstrapping the standard errors.

[18] To identify whether individual attributes are associated with choosing an in-group partner, Tables A4 and A5 report the marginal effects of a logit model for the Positive and Negative treatments (respectively), where Y is a binary variable that equals 1 if the individual choses a partner with the same gender (1), ethnicity (2) or religion (3) in the dictator game and likewise in the risk game in cols (4)-(6) respectively. In the Positive treatment, Table A4 reveals that women and high-belief individuals are more likely to make ingroup choices with respect to gender and religion in both games, whereas Christians are more likely to favor their own group only in the dictator game and Athiests are less likely to favor their own group in the risk game. Moreover, the results regarding women, Christians, and Athiests are mirrored in the Negative treatment results in Table A5.

[19] Li (2020) surveys the group identity literature in the labor maket and finds that, with exceptions, group identity leads to ingroup favoritism and outgroup discrimination.

treatment, discarding a partner due to religious identity does not automatically result in being matched with another partner of their choice. Thus, it cannot be directly inferred that subjects favor a religious identity at the expense of others, but rather that they discriminate against one of them. Appendix Tables A4 and A5 display marginal effects of a logit model to investigate whether some groups are more likely to select or discard in/out-groups by social category.

Table 7. Percentage distribution of ingroup and outgroup choice

Positive		*Dictator*	*Risk*
Gender	*Ingroup*	0.47	0.54
	Outgroup	0.53	0.46
	p-value	*0.408*	*0.417*
Ethnicity	*Ingroup*	0.43	0.44
	Outgroup	0.57	0.56
	p-value	*0.198*	*0.314*
Religion	*Ingroup*	0.40	0.32
	Outgroup	0.60	0.68
	p-value	*0.039***	*0.001****
Negative			
Gender	*Ingroup*	0.58	0.47
	Outgroup	0.42	0.53
	p-value	0.177	0.553
Ethnicity	*Ingroup*	0.29	0.41
	Outgroup	0.71	0.59
	p-value	0.014**	0.211
Religion	*Ingroup*	0.35	0.31
	Outgroup	0.65	0.69
	p-value	0.060*	0.013**

3.2 Economic decision making

In this subsection, we consider the amount that was either transferred (dictator) or invested (risk). The second and third column in Table 8 display the average proportions transferred in the different tasks in the dictator game in both Positive and Negative treatments.[20] It initially appears that the possibility of choosing/discarding a partner based on social categories did not condition altruistic behavior. The average percentages transferred in Task 0, where subjects could not select any category, were similar to those in tasks where subjects could discriminate. In the Positive

[20] We removed dynamically inconsistent decisions in the dictator game (subjects who pay for selecting social categories but later did not transfer anything). In all other cases we used all of the data.

treatment, statistical tests show no significant differences between the average percentage transferred in Task 0 compared with both costly and free tasks, second and fifth lines, respectively (0.271 vs. 0.268, p = 0.879; 0.271 vs. 0.291, p = 0.442). Similar results can be found in the Negative treatment (0.276 vs. 0.247, p = 0.175; 0.276 vs. 0.290, p = 0.638).

However, a closer examination of the distribution of donations in tasks when subjects had the possibility of discriminating shows that when subjects discriminated, they gave more than when they did not discriminate. This result holds (but not always significantly) when subjects had to pay to select categories both in the Positive (0.308 vs. 0.248, p = 0.001; 0.304 vs. 0.266, p = 0.284) and in the Negative treatment (0.328 vs. 0.232, p = 0.000; 0.300 vs. 0.282, p = 0.631).

Table 8. Average transfer/investment decisions

	Dictator Pos.	Dictator Neg.	Risk Pos.	Risk Neg.
	Av. Transf.	Av. Transf.	Av. Inv.	Av. Inv.
Task 0	0.271	0.276	0.683	0.708
Costly Tasks	0.268	0.247	0.608	0.586
- Selecting	0.308	0.328	0.871	0.911
- Non selecting	0.248	0.232	0.456	0.478
Free Task	0.291	0.290	0.633	0.608
- Selecting	0.304	0.300	0.810	0.807
- Non selecting	0.266	0.282	0.439	0.429

We now consider the investment decisions in the risk game. The last two columns in Table 9 show the percentage of subjects who invested their money in the risk game. It appears that, on average, subjects did not take advantage of the possibility of choosing/discarding social categories. In the Positive treatment, the statistical tests show no significant differences in the percentage of subjects investing in Task 0, compared with both costly and free tasks, respectively (0.683 vs. 0.608, p = 0.118; 0.683 vs. 0.633, p = 0.399). Moreover, in the Negative treatment, the percentage of subjects investing in Task 0 was even higher than in the costly tasks (0.708 vs. 0.586, p = 0.008; 0.708 vs. 0.608, p = 0.095).

However, the previous result is driven by the opposite behavior of two groups of subjects, those who selected social categories and those who did not. In the costly tasks in the Positive treatment, when subjects chose a partner, the percentage of investments was significantly higher than in Task 0 (0.871 vs. 0.683, p = 0.000) and than when subjects did not chose a partner based on social categories (0.871 vs. 0.456, p = 0.000). What is more, when subjects did not choose a

partner, the percentage of investments was also significantly lower than in Task 0 (0.683 vs. 0.456, p = 0.000). This behavioral pattern is also observed in the free task (0.810 vs. 0.683, p = 0.066; 0.810 vs. 0.439, p = 0.000; 0.683 vs. 0.439, p = 0.002). This suggests two results: 1) Choosing a partner increases the percentage of investments, and 2) Those subjects with the option to choose, but who do not execute it, invest less than in Task 0.

Similar results can be found in the Negative treatment regarding the costly tasks. When subjects discarded a partner based on social categories, the percentage of investments was significantly higher than in Task 0 and than when subjects did not discard a peer (0.911 vs. 0.708, p = 0.000; 0.911 vs. 0.478, p = 0.000). Once again, when subjects did not discard a type of partner, the percentage of investments was significantly lower than in Task 0 (0.708 vs. 0.478, p = 0.000). Concerning the free task, an analogous pattern is observed. When subjects did not discard a partner, the percentage of investments was significantly lower than in Task 0 (0.429 vs. 0.708, p = 0.000) and when subjects did discard a partner (0.429 vs. 0.807, p = 0.000). However, when subjects discarded some type of peer, the percentage investments, although slightly higher, were not significantly different from that in Task 0 (0.807 vs. 0.708, p = 0.151). So, when discarding is free, subjects discard but this doesn't lead to a significant increase in the investment.

In summary, selecting a partner based on social categories seems to also have economic consequences. On the one hand, it may lead to an increase in economic donations, and on the other, it may lead to higher investments. This latter finding seems robust across a wide range of investment contexts.

4. ROBUSTNESS TREATMENT

Next we present the results of an additional treatment that tested for robustness. In this treatment, participants face the same five tasks as in the previous ones, but participants instead asked about the Gender, Ethnicity, and/or Religion of the partner with whom they have already been randomly paired, at a cost in the costly tasks and at no cost in the Free task whether their partner belongs to one of the following groups: Christian, Muslim, Hindu, Buddhist, Atheist, or Other. For instance, if a participant asks whether their partner is atheist, they will receive an affirmative answer if their partner is an atheist and a negative one otherwise. Therefore, if the partner does not belong to that social category, their real social category is not revealed. Under this procedural setting, called the

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Information treatment, participants were also faced with the same five tasks as in the other treatments. A total of 240 subjects were split between the dictator and risk game. [21]

We consider that the decision-making process in this treatment involves a slight but relevant change compared to the discrimination treatments. When subjects either choose or discard a social category of their partner, they may have previously decided to transfer a positive amount of money to someone. However, in the *Information* treatment, subjects first ask about a partner's social categories and then, according to the information received, they decide whether or not to send an amount of money.

As in the previous section, we first analyze the decisions regarding the selection of categories and after that move to the giving/investing decisions.

4.1 Selection and hierarchy of social categories in information treatment

Although obtaining information about a partner might not seem as relevant as selecting/discarding them according to social categories, when subjects were allowed to ask about these social categories, a noticeable percentage of subjects made use of this option. Table 9, which adds a data row for the Information treatment to Table 2, shows that in the dictator game, 42% of subjects asked at least once about social categories during the costly rounds and this percentage rises up to 63% in the free round. The percentages were very similar in the risk game (43% and 71% respectively). As can be seen, the interest of participants in selecting social categories was also robust and consistent with experimental scenarios with a lower decision-making capacity.

Table 9. Percentage of subjects who selected a social category in information treatment

	Costly		**Free**	
Treat	*Dictator*	*Risk*	*Dictator*	*Risk*
Positive	0.561	0.626	0.714	0.671
Negative	0.358	0.536	0.506	0.630
Information	0.421	0.434	0.630	0.713

Table 10 shows the percentage distribution of social categories in the Information treatment. Similar to the previous treatments, the results show that Gender is the most relevant social category and Religion increases in relevance in the risk game. In the dictator game, statistical

[21] The Information treatment was conceived as a test of robustness for the previous ones and it was run simultaneously.

tests show significant differences between Gender and Ethnicity (0.527 vs. 0.237 and 0.403 vs. 0.281, respectively, for costly and free tasks; p = 0.000 for each); and between Gender and Religion (0.527 vs. 0.237, p = 0.000; 0.403 vs. 0.310, p = 0.006, under cost and free tasks respectively). Meanwhile, Religion and Ethnicity do not show significant differences (0.237 vs. 0.237, p =1.000; 0.281 vs. 0.310, p = 0.290).

Table 10. Percentage distribution of choices across social categories in the information treatment

	Costly		**Free**	
Treat	*Dictator*	*Risk*	*Dictator*	*Risk*
Gender	0.527	0.439	0.403	0.376
Ethnicity	0.237	0.253	0.281	0.278
Religion	0.237	0.308	0.310	0.345

In the risk game, Gender surpasses both Ethnicity and Religion as the most demanded category (Gender vs. Ethnicity: 0.439 vs. 0.253, p = 0.006; and Gender vs. Religion: 0.439 vs. 0.308, p = 0.061) in the cost tasks. In the free task, Religion competes in demand with Gender (0.376 vs. 0.345, p = 0.487, Gender vs. Religion), and Ethnicity seems the least required social category (Gender vs. Ethnicity: 0.376 vs. 0.278, p = 0.008; and Religion vs. Ethnicity: 0.345 vs. 0.278, p = 0.025).

4.2 Economic decision making in the information treatment

In this subsection we analyze the economic decisions participants made in both games (the amount of money transferred in the dictator game and the decision whether to invest in the risk game) when, rather than choosing or discarding a social category, participants can *ask about* the gender, ethnicity and/or religion of the partner with whom they have *already* been randomly paired.

The first column in Table 11 shows the percentage transferred to the recipient from the available amount of money after selecting social categories in the dictator game. The results suggest that the possibility of getting information about their partner did not affect the altruistic behavior of the subjects. Although the percentage transferred in Task 0, where subjects could not ask, was higher to that in the costly tasks (0.273 vs. 0.247, p = 0.069), this result is driven by the percentage transferred when subjects did not ask (0.273 vs. 0.236, p = 0.008). In fact, the statistical

test shows that when endowments were equal, there were no significant differences between the percentage transferred in Task 0 and in the free task (0.273 vs. 0.279, p = 0.764).

Table 11. Average transfer/investment decisions

	Dictator Info.	Risk Info.
	Av. Transf.	Av. Inv.
Task 0	0.273	0.662
Costly Tasks	0.247	0.588
- Asking	0.281	0.780
- Positive feedback	0.294	0.900
- Negative feedback	0.275	0.718
- Non asking	0.236	0.510
Free Task	0.279	0.581
- Asking	0.291	0.629
- Positive feedback	0.288	0.910
- Negative feedback	0.294	0.593
- Non asking	0.256	0.462

Regarding subjects' investment decisions, the last column in Table 11 shows the percentage of subjects who invested their money in the risk game. As can be seen, the possibility of asking about the social categories of their partners did not increase the percentage of investments. The statistical tests show no significant differences in the percentage of subjects investing in Task 0 compared with both costly and free tasks, respectively (0.588 vs. 0.662, p = 0.144; 0.581 vs. 0.662, p = 0.177).

This result is driven by two reasons. First, subjects who preferred not to ask about the categories of their partners invested significantly less than average investment in Task 0, both in costly and free tasks (0.510 vs. 0.662, p = 0.003; 0.462 vs. 0.662, p = 0.036). Secondly, and more interestingly, subjects invested significantly more when they received positive answers than when they received negative ones both in the costly and in the free tasks (0.900 vs. 0.718, p = 0.007; 0.910 vs. 0.593, p = 0.005).[22] This suggests that when subjects asked to find out the social categories of their partners, they did so mostly to determine whether these partners belonged to the social categories they consider more trustworthy, that is, to positively discriminate between those

[22] To compute these categories, we only include in the yes group those who had identical matches to what they asked about.

social groups. In fact, when subjects received positive answers, they invested significantly more than in Task 0, but when they received negative answers, the investment decisions were not significantly different from those in Task 0, again, both in the costly tasks (0.900 vs. 0. 0.662, p = 0.000; 0. 718 vs. 0. 0.662, p = 0.433) and in the free task (0.910 vs. 0. 662, p = 0.011; 0.593 vs. 0.662, p = 0.311). Perhaps since the percentage of times subjects received positive feedback for their questions was very low (34% and 11% in the costly and free tasks, respectively), we find no increase in the level of investments when subjects had the possibility of asking about the social categories of their partners.

These additional results appear to confirm three previous findings: i) the hegemony of Gender as the key social category in many different contexts; ii) the increase in the importance of Religion as a strategic social category when participants' own payoffs are at stake, suggesting statistical beliefs about groups play a role; iii) the preference of subjects for positive discrimination over negative. In sum, this additional treatment adds robustness to the unequal relevance of social categories depending on the economic context.

5. DISCUSSION

Our study is exploratory in the sense that we are helping to build knowledge about which social categories come into play (and how) in different interpersonal environments. We therefore lay out some ideas and hypotheses for future research. First, we believe it is worthwhile exploring the dimensions and robustness of this market of social categories from both the supply and demand sides. On the demand side, how universal is the general ranking we have observed (Gender > Religion > Ethnicity)? Is this also a characteristic for other segments of society, such as with respect to generational issues or political views? Regarding the supply side, are there other social categories that could be more salient than those we explore? These could include aspects such as nationality, age, political orientation, and marital status.

It also seems worthwhile to consider other economic contexts. For example, what is the most demanded social category in other economic contexts such as hiring decisions (experimentally, perhaps in the gift-exchange game). For women, for example, is this for the

purpose of paying them less?[23] More generally, how and why do people use social information to make economic decisions? Some environments (both field and experimental) involve cooperative or team behavior. Again, what are the most sought after social categories for employees in this environment? An old conundrum is whether one would rather hire a brilliant but socially very flawed researcher or someone with whom one enjoys eating lunch but creates little research. This most likely has even more bite when forming work groups or teams, where social interaction is critical. For example, considerable research (e.g., Adams and Ferreira, 2009; Daunfeldt and Rudholm, 2012) indicates that more gender-balanced corporate boards make better decisions. Charness and Rustichini (2011) find that women making choices in front of other interested female group members choose cooperation more frequently than men making choices in front of other interested male group members. A natural question is the limit of the cooperation that can be sustained in this way.

We offer some speculative hypotheses for such future research. We do expect that one's nationality or political orientation can be more relevant than other social categories such as gender or religion; this most likely will depend on characeristics of the individual as well as the issue at hand. We would also expect that young people prioritize social categories differently from less-young people; perhaps age is more of a concern for young people and religion is more of a concern for those people approaching the end of their lives. Some societies in the world prioritize social categories in ways different from more secular societies and one would expect this to affect the views of those societies' members, as well as its economic performance.

Another consideration to be discussed in research must be the social desirability effect, that is, the tendency to answer in accordance with social norms rather than truthfully. This may result in underestimates of the prevalence of socially undesirable attributes and overestimates of the prevalence of socially desirable attributes (e.g., Paulhus, 1991; Tourangeau and Yan, 2007). In our study, for instance, as racial discrimination is currently a particularly sensitive topic, subjects' decisions about Ethnicity in our experiment could have been partly based on social desirability considerations. It is possible that in the Negative treatment, Ethnicity was the least selected social category because subjects were reluctant to choose discriminated ethnic minorities due to social desirability concerns. However, if this were the case, the same social desirability considerations

[23] Schweiren (2012) finds that both male and female firms pay females less in the gift-exchange game.

should have led subjects to favor those discriminated ethnic minorities in the Positive treatment, and in this treatment Ethnicity was also the least relevant category. Therefore, although our design does not allow for the measurement of the effect of social desirability considerations, this result suggests that the hierarchy of social categories we found, the predominance of Gender, is not driven by concerns of social desirability. In this vein, when considering both discrimination treatments, where participants may either choose or discard any social category, whether in a context of taste-based or statistical discrimination, Gender dominates 12 out of 16 pair comparisons.[24]

In addition, in the information treatment, where participants just ask about the partner's social category with whom they have already been randomly paired, and they do not select anything, Gender is also the most requested category. Under this latter setting, social desiribility does not play a role. Rather, it seems that participants are curious to know the characteristics of their partner that they consider relevant to their decisions. In this manner, the prominence of Gender over other social categories across diverse contexts seems robust beyond the social desirability effect.

Finally, one further consideration about the external validity of these results. We find evidence to support the idea that people care and rank social categories and that the economic context matters. To what extent our findings are generalizable above and beyond our subject pool it is a matter for future research, but the predominance of *Gender* across our different scenarios and the significantly smaller frequency of observed negative discrimination suggest that these two results are likely to be easily generalizable. Based on our results, we suspect that these results – emerging from natural identities – may apply to social environments beyond this experimental setting, and one interesting extension could involve exploring the extent to which people care about social categories in other real-world contexts.

[24] There is only one significant exemption to this global domain: Religion in the risk-positive condition, where the uncertainty of their own payoffs in an investment decision and prejudices about social group decision making seem to play a role.

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6. CONCLUSION

People care about social categories. In fact, people naturally classify others into social categories and this social categorization shapes many relevant aspects of daily life (Rhodes and Baron, 2019). The incidence of social categorization can range from who our friends are to who employers hire and which politicians we vote for. For that reason, it is critical to understand how, when, and to what extent individuals rank social categories. To this aim, we conducted a novel analysis to help to disentangle a potential hierarchization of social categories. We see that participants selected partners based on social categories, whether or not selection was free.

Since one's identity is naturally multifaceted, one might wonder "which facet of one's identity comes to the fore in particular situations" (Charness and Chen, 2020, p. 710). The answer to this question is complex and other relevant facets such as age, nationality, and political orientation are beyond the scope of this study. However, we find evidence to support the idea that individuals rank social categories and that the economic context in which this happens matters. Overall, *Gender* seems to be the dominant social category across different scenarios (either when choosing, discarding or asking about partners, and with either costly or free decisions). Yet, this hierarchy is context dependent: Religion also becomes important when participants' own payoffs are at stake and when prejudices in social group decision making are relevant.

We find that it seems easier for someone to discriminate in favor of a partner (based on some social category) than to discriminate against a partner. There appears to be an additional non-monetary cost for excluding someone than for including someone. This accords well with behavior in the field, where it is much more agreeable to welcome a person into one's group than to banish a person from it. In fact, we find that when subjects ask to find out the social categories of their partners, they do so mostly to discriminate in favor of those social groups.

The details show that the relevance of Gender is primarily driven by individuals opting for a female partner. This particular result shows the importance of continuing to explore the relevance of social categories. While women were more requested (as a partner) than men under our research conditions, discrimination against women has been widely documented in many different settings such as bargaining, hiring, employment, referral contexts, and academic contexts (Bertrand and Mullainathan, 2004; Black and Strahan, 2001; Bohnet, van Geen and Bazerman, 2016; Bowles, Babcock and Lai, 2007; Goldin and Rouse, 2000; Milkman, Akinola and Chugh, 2012, 2015;

Moss-Racusin et al., 2012; Neumark, Bank and Nort, 1996; Reuben, Sapienza and Zingales, 2014; Sarsons, 2017).

In addition, we also observe that when Religion is a key social category, individuals mostly prefer to avoid an atheist as a partner. Similar to Chuah et al. (2016), we observe that religious and non-religious participants prefer to be paired with religious partners. In line with Mueser (1999) and Anderson et al. (2006), religious people are generally believed to be more trustworthy. However, contrary to most of the experimental literature that suggests participants tend to favor ingroup members at the expense of outgroup, we find a strong outgroup preference for Religion. That is, subjects exhibited sharp preferences for being matched with a partner of a different faith. This new result requires additional analysis. While Religion seems to matter a great deal to some people, it is not always restricted to one's own faith.

Finally, we find evidence that the selection of social categories for the purpose of choosing a parter often has economic consequences: participants increased both donations and investments. The increase in investments was robust across a wide range of experimental settings. This result highlights the importance of a deeper understaning of social interactions

Our results on selection based on natural identities could help to shed light on the empirical foundations of how, when, and to what extent individuals prioritize their social world; in parallel, this research could help in the design of better policy mechanisms to address different types of discrimination that affect almost all social interactions in daily life. Clearly, more research is needed *in this important area of discretionary discrimination.*

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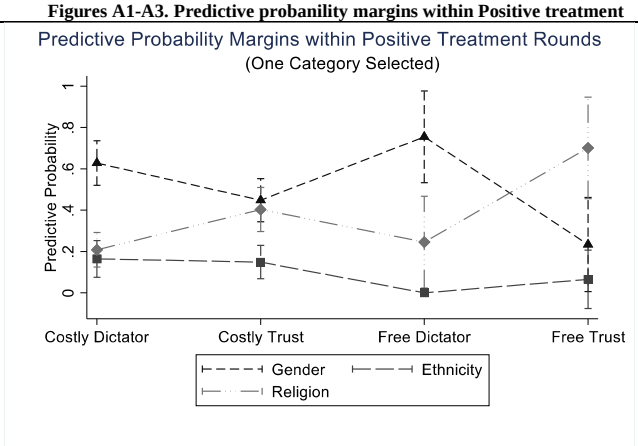
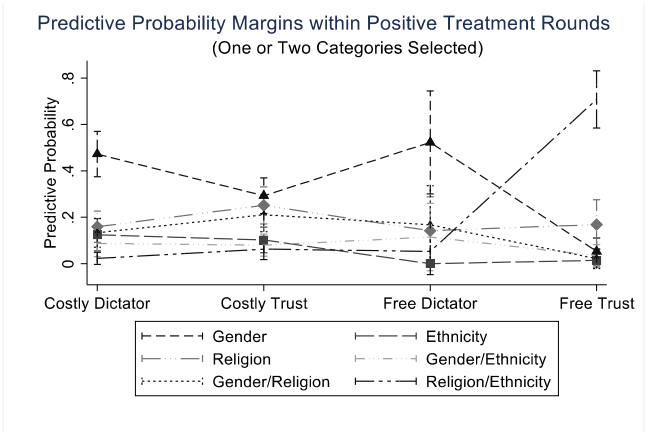
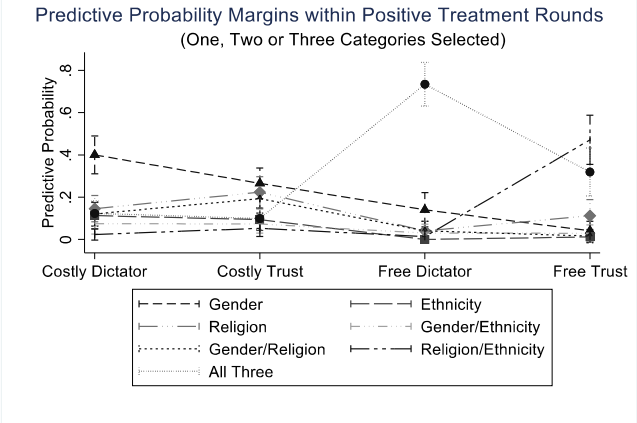
APPENDIX

Figures A1-A3. Predictive probanility margins within Positive treatment







Figures A1-A3 separately plot predictive probability margins of a series of multinomial regressions by game and cost structure for those who selected up to one (A1), two (A2) or three categories (A3) in the Positive treatment rounds. In Figure A1, where individuals selected only one category, the dependent variable is a categorical variable that equals 1, 2, or 3 depending on whether the individual chose gender, ethnicity or belief respectively. In Figure A2, individuals selected either one or two categories, allowing the dependent variable to range from 1 to 6 depending on the choice: gender, ethnicity, belief, gender and ethnicity, gender and belief, and ethnicity and belief. In Figure A3, where individuals selected more than one but up to three categories, then the dependent variable ranges from 1 to 7 where the last category refers to those who selected all three. Covariates include a female dummy, three ethnicity dummies (Asian, White, Other), three belief categories (Christian, Atheist, Other), two intensity of belief categories (High-belief, Low-belief), and two political categories (Conservative, Liberal).

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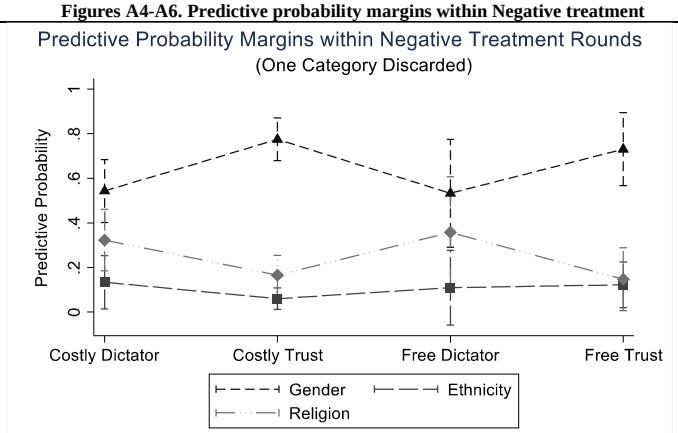
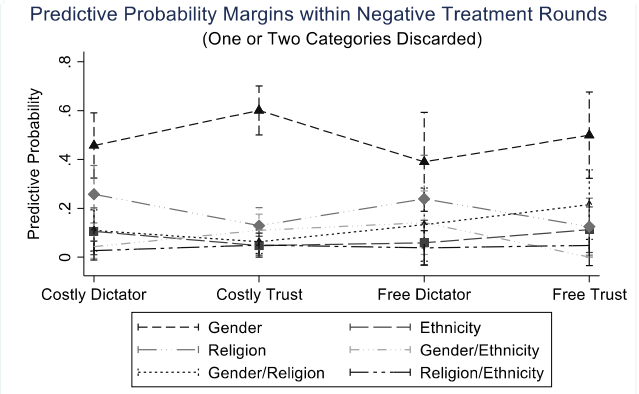
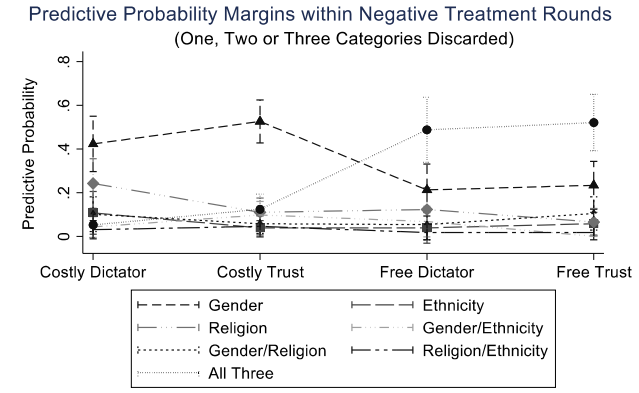
Figures A4-A6. Predictive probability margins within Negative treatment







Figures A4-A6 replicate same procedure as Figures A1-A3 for the Negative treatment rounds.

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Table A1. Percentage of times in which social categories were selected treatment

		Dictator				Risk			
	# choices	*One*	*Two*	*Three*	***All***	*One*	*Two*	*Three*	***All***
Task 1. Only one choice. Costly	*Positive*	0.34			*0.34*	0.38			*0.38*
	Negative	0.26			*0.26*	0.24			*0.24*
	Info	0.30			*0.30*	0.32			*0.32*
Task 2. Up to two choices. Costly	*Positive*	0.14	0.22		*0.36*	0.15	0.22		*0.37*
	Negative	0.09	0.08		*0.17*	0.15	0.10		*0.25*
	Info	0.10	0.14		*0.24*	0.15	0.12		*0.27*
Task 3. Up to three choices. Costly	*Positive*	0.17	0.03	0.13	*0.33*	0.12	0.12	0.11	*0.35*
	Negative	0.07	0.04	0.02	*0.13*	0.13	0.03	0.09	*0.25*
	Info	0.07	0.05	0.07	*0.19*	0.15	0.05	0.07	*0.27*
Free Task. Up to three choices.	*Positive*	0.12	0.06	0.51	*0.69*	0.09	0.26	0.17	*0.52*
	Negative	0.14	0.06	0.29	*0.49*	0.17	0.06	0.25	*0.48*
	Info	0.15	0.04	0.44	*0.63*	0.15	0.04	0.53	*0.72*

Table A2. Marginal effects estimation of a Logit Model by social categories: Positive Treatment

	Dictator Game			Risk Game		
Logit Models	Gender (1)	Ethnicity (2)	Religion (3)	Gender (4)	Ethnicity (5)	Religion (6)
Free Round	0.40***	0.43***	0.43***	-0.10*	0.42***	0.30***
	(0.05)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
Female	-0.08	-0.08*	-0.12***	-0.01	-0.03	-0.04
	(0.05)	(0.04)	(0.04)	(0.06)	(0.05)	(0.06)
Asian	0.20***	0.13*	0.04	-0.03	0.01	-0.02
	(0.08)	(0.07)	(0.07)	(0.09)	(0.08)	(0.08)
White	-0.01	-0.05	0.04	-0.01	-0.03	0.07
	(0.07)	(0.06)	(0.06)	(0.10)	(0.08)	(0.10)
Christian	0.14*	0.09	0.02	0.10	0.02	0.15*
	(0.07)	(0.06)	(0.06)	(0.08)	(0.07)	(0.08)
Atheist	0.14**	0.06	0.06	0.08	0.19**	0.16*
	(0.07)	(0.06)	(0.07)	(0.09)	(0.09)	(0.09)
High-belief	0.04	-0.04	0.01	-0.01	0.02	-0.01
	(0.07)	(0.06)	(0.06)	(0.07)	(0.06)	(0.07)
Conservative	0.01	0.00	-0.00	0.00	0.03**	0.02
	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.02)
Observations	388	388	388	295	295	295

Notes: Y is binary variable that equals 1 if an individual choses gender (1), ethnicity (2) or religion (3) in the dictator game and likewise in the risk game in col (4)-(6) respectively. Sample is restricted to those who shared a positive amount in the Positive treatments in all columns. Marginal effects (d) for discrete change of dummy variable from 0 to 1; Standard errors in parentheses (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

Table A3. Marginal effects estimation of a Logit Model by social categories: Negative Treatment

	Dictator Game			Risk Game		
Logit Models	Gender (1)	Ethnicity (2)	Religion (3)	Gender (4)	Ethnicity (5)	Religion (6)
Free Round	0.29***	0.27***	0.25***	0.21***	0.25***	0.33***
	(0.06)	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
Female	-0.01	-0.02	-0.01	-0.08	-0.05	-0.07
	(0.04)	(0.03)	(0.04)	(0.06)	(0.05)	(0.05)
Asian	0.01	0.09*	-0.00	-0.17**	-0.04	-0.01
	(0.08)	(0.06)	(0.08)	(0.08)	(0.07)	(0.07)
White	0.01	-0.02	-0.14*	-0.07	-0.12**	-0.01
	(0.07)	(0.05)	(0.07)	(0.08)	(0.06)	(0.07)
Christian	0.02	0.04	0.23***	0.03	0.09	0.03
	(0.06)	(0.04)	(0.06)	(0.08)	(0.06)	(0.06)
Atheist	0.06	0.06	0.12***	0.13	0.08	0.13*
	(0.06)	(0.04)	(0.04)	(0.09)	(0.06)	(0.07)
High-belief	-0.00	0.01	-0.10**	-0.04	-0.01	0.10*
	(0.06)	(0.04)	(0.05)	(0.07)	(0.05)	(0.06)
Conservative	-0.01	-0.00	-0.01	-0.04***	0.02	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Observations	348	348	348	284	284	284

Notes: Y is binary variable that equals 1 if an individual choses gender (1), ethnicity (2) or religion (3) in the dictator game and likewise in the risk game in col (4)-(6) respectively. Sample is restricted to those who shared a positive amount in the Negative treatments in all columns. Marginal effects (d) for discrete change of dummy variable from 0 to 1; Standard errors in parentheses (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

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Table A4. Marginal effects estimation of a Logit Model by social categories: Positive Treatment – ingroup and outgroup choices

Choose Ingroup	Dictator			Risk		
Logit Models	Gender	Ethnicity	Religion	Gender	Ethnicity	Religion
	(1)	(2)	(3)	(4)	(5)	(6)
Free Round	-0.01	0.06	-0.00	-0.02	-0.08	-0.43***
	(0.07)	(0.10)	(0.09)	(0.13)	(0.10)	(0.06)
Female	0.44***	-0.14	0.11	0.42***	0.09	-0.01
	(0.09)	(0.12)	(0.11)	(0.09)	(0.11)	(0.06)
Asian	0.01	0.09	-0.12	0.14	0.09	-0.05
	(0.12)	(0.15)	(0.15)	(0.14)	(0.19)	(0.09)
White	0.03	0.19	-0.10	0.46***	-0.23	-0.18**
	(0.12)	(0.15)	(0.15)	(0.12)	(0.19)	(0.09)
Christian	0.03	-0.02	0.29**	0.09	-0.07	0.06
	(0.11)	(0.17)	(0.14)	(0.16)	(0.19)	(0.10)
Atheist	-0.02	-0.15	0.08	-0.02	-0.16	-0.15*
	(0.11)	(0.17)	(0.13)	(0.14)	(0.19)	(0.08)
High-belief	0.14	-0.06	0.21*	0.20	-0.11	0.26***
	(0.11)	(0.14)	(0.12)	(0.15)	(0.14)	(0.10)
Conservative	-0.02	0.01	0.03	0.04	-0.02	-0.05***
	(0.02)	(0.03)	(0.03)	(0.03)	(0.03)	(0.02)
Observations	148	94	110	94	82	111

Notes: Y is binary variable that equals 1 if an individual choses a partner with the same gender (1), ethnicity (2) or religion (3) in the dictator game and likewise in the risk game in col (4)-(6) respectively. Sample is restricted to those who chose gender in columns (1) and (4), those who chose ethnicity in col (2) and (5) and those who chose beliefs in col (3) and (6) respectively. Marginal effects (d) for discrete change of dummy variable from 0 to 1; Standard errors in parentheses (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

Table A5. Marginal effects estimation of a Logit Model by social categories: Negative Treatment – ingroup and outgroup choices

Choose Ingroup	Dictator			Risk		
Logit Models	Gender	Ethnicity	Religion	Gender	Ethnicity	Religion
	(1)	(2)	(3)	(4)	(5)	(6)
Free Round	-0.05	-0.05	-0.12	0.09	0.05	0.12
	(0.10)	(0.16)	(0.10)	(0.07)	(0.14)	(0.09)
Female	-0.44***	0.01	0.28***	-0.53***	0.26*	-0.12
	(0.11)	(0.14)	(0.09)	(0.08)	(0.14)	(0.16)
Asian	-0.23	-0.27	-0.17	-0.06	-0.03	0.29**
	(0.21)	(0.28)	(0.22)	(0.14)	(0.24)	(0.13)
White	-0.28	-0.10	0.37	-0.12	0.10	0.14
	(0.21)	(0.30)	(0.29)	(0.08)	(0.19)	(0.14)
Christian	0.00	-0.18	-0.31*	-0.12	0.03	0.19
	(0.14)	(0.19)	(0.16)	(0.11)	(0.28)	(0.14)
Atheist	-0.04	0.04	0.24	-0.22*	0.19	0.37***
	(0.13)	(0.22)	(0.15)	(0.12)	(0.24)	(0.13)
High-belief	-0.04	-0.14	0.30*	-0.44***	-0.13	-0.26
	(0.18)	(0.20)	(0.18)	(0.13)	(0.18)	(0.18)
Conservative	0.00	0.03	-0.08***	-0.01	-0.00	-0.05*
	(0.03)	(0.03)	(0.03)	(0.02)	(0.04)	(0.03)
Observations	74	38	54	106	49	58

Notes: Y is binary variable that equals 1 if an individual choses a partner with the same gender (1), ethnicity (2) or religion (3) in the dictator game and likewise in the risk game in col (4)-(6) respectively. Sample is restricted to those who chose gender in columns (1) and (4), those who chose ethnicity in col (2) and (5) and those who chose beliefs in col(3) and (6) respectively. Marginal effects (d) for discrete change of dummy variable from 0 to 1; Standard errors in parentheses (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$).

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Figure A7. Identity distribution within each social category in our sample

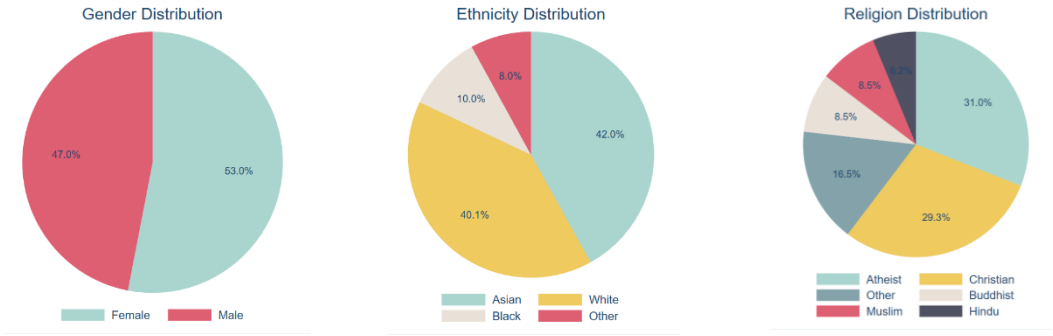

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Table A6. Percentage distribution of ingroup and outgroup choice

		Costly		Free	
Positive		*Dictator*	*Risk*	*Dictator*	*Risk*
Gender	*Ingroup*	0.49	0.55	0.45	0.53
	Outgroup	0.51	0.45	0.55	0.47
	p-value	*0.757*	*0.256*	*0.300*	*0.754*
	*p-value**	*0.811*	*0.427*	*0.436*	*0.832*
Ethnicity	*Ingroup*	0.38	0.51	0.45	0.38
	Outgroup	0.62	0.49	0.55	0.62
	p-value	*0.042***	*0.819*	*0.345*	*0.020***
	*p-value**	*0.217*	*0.870*	*0.533*	*0.127*
Religion	*Ingroup*	0.41	0.51	0.39	0.07
	Outgroup	0.59	0.49	0.61	0.93
	p-value	*0.076**	*0.862*	*0.016***	*0.000****
	*p-value**	*0.255*	*0.899*	*0.104*	*0.004****
Negative					
Gender	*Ingroup*	0.59	0.46	0.57	0.49
	Outgroup	0.41	0.54	0.43	0.51
	p-value	0.106	0.391	0.251	0.824
	*p-value**	0.270	0.551	0.472	0.881
Ethnicity	*Ingroup*	0.27	0.35	0.30	0.46
	Outgroup	0.73	0.65	0.70	0.54
	p-value	0.034**	0.040**	0.002***	0.588
	*p-value**	0.216	0.161	0.121	0.727
Religion	*Ingroup*	0.38	0.24	0.33	0.36
	Outgroup	0.62	0.76	0.67	0.64
	p-value	0.087*	0.000***	0.009***	0.027**
	*p-value**	0.250	0.069*	0.102	0.134

Table A6 displays the percentage of subjects who chose or discard ingroup and outgroup members, by social category (gender, ethnicity, religion), treatment (positive, negativement) and cost structure (costly, free). To see whether there is a statistically significant difference between the percentage of times that subjects choose ingroup vs outgroup members, we also report the p-value associated with a two-sample t-test using two variables (ingroup and outgroup). Table A6 includes the p-values without bootstrapping and p-values* bootstrapping.

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Original instructions

Our experimental setting consists of two different experimental games: dictator and risk. For the dictator game, we follow Eckel and Grossman (1996) and Hoffman, McCabe and Smith (1996). For the risk game, we follow the original one designed by Berg, Dickhaut and McCabe (1995), but this version is based on Bohnet and Zeckhauser (2004). The instructions were slightly modified according to the treatment. Next, we reproduce the instructions that we used for the Dictator game. Before starting the experiment, we proceeded with the same experimental procedure:

Welcome to this experiment and thanks for participating. Please read the following instructions carefully. During this session, depending on your decisions and those of others, you could earn some money over and above your show-up fee. It is very important that you read all the instructions carefully, so that you understand the potential consequences of your decisions. If you have any questions, please raise your hand and an experimenter will come to you.

During the session, please do not try to communicate with any of the other participants and please do not use mobile phones. If you do not follow these rules, you will be excluded from the study and will not be paid. Below, we describe the session you are going to participate in. The anonymity of all the decisions you take during the session is guaranteed. You can leave the experiment at any time if you are not comfortable with the questions with no consequences for you.

During the session, you will participate in nine experiments. One of them will be randomly selected to determine your earnings. In each of the experiments you will earn points. Then, at the end of the experimental session, your total points from the experiment randomly selected to determine your earnings will be converted into pounds using the following conversion rate: 1 point = £1. These experiments consist of Players A and B. In each experiment one Player A will be randomly paired with one Player B. All participants in this room will make decisions as Player A. The earnings resulting from today's session plus a show-up fee will be given to you in cash at the end of this session.

The experiment consists of two players: Player A and Player B._Each Player A is paired with one Player B._Player A must propose a distribution of 10 points between

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himself/herself and Player B whom he/she is paired with. That is, Player A has to specify how many of those 10 points he/she receives and how many points Player B will receive. The amounts must be integer numbers.

Distribution Proposal	*Player A's points*	*Player B's points*
(10,0)	*10*	*0*
(9,1)	*9*	*1*
(8,2)	*8*	*2*
(7,3)	*7*	*3*
(6,4)	*6*	*4*
(5,5)	*5*	*5*
(4,6)	*4*	*6*
(3,7)	*3*	*7*
(2,8)	*2*	*8*
(1,9)	*1*	*9*
(0,10)	*0*	*10*

Example: Let's assume that you, as Player A make a proposal of (6,4), that is 6 points for Player A and 4 points for Player B. Then, you will receive 6 points and Player B 4 points.
In this experiment you are Player A.

Task 0 in Dictator Game

For this experiment you will receive a show-up fee of £3.00 in cash at the of the experiment.

You have to make a proposal. My proposal: _____

Task 1 in Dictator Game

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For this experiment you will receive a show-up fee of £3.50 in cash at the of the experiment; and you can spend £0.50 from your show-up fee to select one characteristic of the Player B you will be paired with from the following categories:

- Gender: Male/Female

- Ethnicity: Black, White, Arab, Asian, Other

- Religion: Christian, Muslim, Buddhist, Jew, Atheist, Other

Therefore, if, for instance, you decide to spend £0.50 from your show-up fee and select the characteristic Male, then, the Player B you will be randomly paired with will proceed only from the subsample composed by Male Players B. In case you would select a characteristic that is not present in the sample, you could select a different one. If you want to spend £0.50 from your show-up fee and select one characteristic of the Player B you will be paired with, please select below the characteristic:

Characteristic: _____

You have to make a proposal. My proposal: _____

(From here on instructions for Task 2, Task 3 and Free Task 3 in Dictator Game are just slightly adapted).