Ethnic bias, economic success and trust: Findings from large sample experiments in Germany and the United States through the Trustlab platform

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Abstract / Résumé

This paper studies ethnic in-group bias in online trust games played by two large representative samples in the United States and Germany through the Trustlab platform, which was launched by the OECD and several research partners in 2017. The ethnic in-group bias, defined as the propensity to favour members of one's own ethnic group in terms of monetary payoff, is significant in both countries. In the United States, members of the three largest ethnic groups trust people from their own ethnic group more than those from other groups. African Americans have a larger in-group bias than White Americans and Hispanics. Ethnic differentiation is not selective, as each group tends to have lower trust in the two other ethnic groups but at roughly the same rate. In contrast, ethnic differentiation is strongly selective in Germany: subjects of German parentage discriminate twice as much against Turkish descent participants as against Eastern European descent participants. Members of both ethnic minorities in Germany trust each other less than their own ethnic group, but do not discriminate against ones of German parentage. We also examine whether releasing information on the trustee being rich reduces ethnic differentiation, while conjecturing that this is a way to remove the stereotype that ethnic minorities are "undeserving poor". We show that, in this case, discrimination by the ethnic majority is indeed reduced. People of Turkish descent who are rich tend to be more trusted than lower-income people of Turkish descent. However, releasing information on income can backfire, as it can increase mistrust within minorities. Finally, we show that group loyalty exists not only according to ethnicity but also according to income, as rich German parentage subjects trust other rich in-group members significantly more than do non-rich Germans.

Keywords: trust, in-group bias, ethnic discrimination, income inequality, online experiment

JEL classification: C99, J71

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Cette étude examine le biais intra-groupe ethnique dans des jeux de la confiance impliquant deux larges échantillons représentatifs aux États-Unis et en Allemagne, et réalisés en ligne sur la plate-forme Trustlab lancée par l'OCDE et plusieurs partenaires de recherche en 2017. Le biais intra-groupe ethnique, défini comme la propension à favoriser des membres de son propre groupe ethnique en termes de paiement monétaire, est significative dans les deux pays. Aux États-Unis, chacun des trois grands groupes ethniques font plus confiance aux membres de leur propre groupe. Les Africains-Américains ont un biais intra-groupe plus élevé que les Américains Blancs et que les Hispaniques. La différenciation ethnique n'est pas sélective au sens où chaque groupe fait moins confiance aux deux autres mais dans la même mesure. En Allemagne, la différentiation est plus forte qu'aux États-Unis et est fortement sélective. Les sujets d'ascendance allemande discriminent deux fois plus les participants d'origine Turque que ceux d'origine d'Europe de l'Est. Les membres de ces deux ethnies minoritaires en Allemagne se font moins confiance qu'aux membres de leur propre groupe, mais ne discriminent pas les sujets d'origine allemande. Nous examinons également si l'information que le partenaire de jeu soit riche réduit la différenciation ethnique, en conjecturant que cette information amoindrit le stéréotype que les minorités ethniques sont pauvres parce qu'elles le méritent. Nous trouvons en effet que la discrimination vis-à-vis des minorités ethniques s'en trouve réduite. Les participants d'origine Turque qui sont riches se voient témoigner plus de confiance que les autres groupes. Cependant, cette information sur la richesse des participants peut avoir des effets pervers car elle accroît la défiance parmi les minorités. Nous montrons finalement que l'allégeance au groupe est définie non seulement par l'ethnie mais aussi par le revenu, puisque les sujets d'ascendance allemande qui sont riches font plus confiance à leurs semblables qu'aux sujets d'ascendance allemande qui ne sont pas riches.

Mots-clés : confiance, discrimination ethnique, inégalité de revenus, expérience en ligne

Classification JEL : C99, J71

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1. Introduction

1. Populist and anti-establishment parties embracing xenophobic attitudes are receiving increased support in Western countries (Betz, 2018[1]; Algan et al., 2019[2]). Some hypothesize that a cultural shift leading to stronger nationalistic attachment and anti-immigration stances are at the basis of this reversal in public opinion. Such a cultural shift is partly the reaction to the previous spread of progressive ideas in Western culture since the late 1960s (Inglehart and Norris, 2017[3]). This cultural backlash, in the words of (Norris and Inglehart, 2018[4]), may have been amplified by larger migratory flows for either economic reasons or conflicts in the Middle East and Africa, which increased ethnic diversity in destination countries. As a result, the demarcation between the "us" and the "them" has become more pronounced in the psychology of many individuals, particularly after widespread feeling of insecurity caused by the 2008 economic crisis in many cohorts of the population (Algan et al., 2017[5]; Guriev, 2018[6]).

2. Research in experimental psychology has studied the foundations of group identity and discrimination for a long time (Allport, 1954[7]; Tajfel et al., 1971[8]; Brewer, 1999[9]). One of the main findings from this research is that the tendency to differentiate between those identified as belonging to the same group (the so-called "in-group") at the expense of others identified as belonging to another group (the so-called "out-group") is endemic (Balliet, Wu and De Dreu, 2014[10]; Lane, 2016[11]). Such an in-group bias has been found in experiments conducted with groups differing for their nationality (Yamagishi et al., 2005[12]; Guillen and Ji, 2011[13]; Akai and Netzer, 2012[14]; Whitt and Wilson, 2007[15]; Romano et al., 2017[16]; Dorrough and Glöckner, 2016[17]), ethnicity (Fershtman and Gneezy, 2001[18]; Fershtman, Gneezy and Verboven, 2005[19]; Bernhard, Fischbacher and Fehr, 2006[20]; Simpson, McGrimmon and Irwin, 2007[21]; Habyarimana et al., 2007[22]; Ahmed, 2010[23]; Burns, 2012[24]; Tanaka and Camerer, 2016[25]; Zhang, Zhang and Putterman, 2019[26]), religious affiliation (Chuah, Fahoum and Hoffmann, 2013[27]; Chuah et al., 2014[28]), castes ((Fehr, Hoff and Kshetramade, 2008[29]; Hoff, Kshetramade and Fehr, 2011[30]), political affiliation (Rand et al., 2009[31]; Weisel and Böhm, 2015[32]), associations, communities, or army units within a country (Goette, Huffman and Meier, 2006[33]; Ruffle and Sosis, 2006[34]; Degli Antoni and Grimalda, 2016[35]) and also when groups differ for purely arbitrary characteristics induced in the laboratory (Tajfel et al., 1971[8]; Charness, Rigotti and Rustichini, 2007[36]; Chen and Li, 2009[37]; Güth, Ploner and Regner, 2009[38]; Heap and Zizzo, 2009[39]). Evidence of in-group bias is widespread even outside the laboratory (Bertrand, Mullainathan and Shafir, 2004[40]; Tjaden, Schwemmer and Khadjavi, 2018[41]; Adida, Laitin and Valfort, 2010[42]).[2]

3. Populism may be interpreted as a trigger making more salient ethnic demarcations and thus amplifying psychological propensity to favour people identified as belonging to one's in-group. The purpose of this paper is to use the tools from experimental economics to better understand the extent and the patterns of ethnic-based differentiation, and to test whether it may be reduced. We focus on two large Western countries, the United States and Germany. While previous research typically focused on cross-national discrimination, or within-country discrimination between two ethnic groups, our use of large samples makes it possible to study differentiation patterns between the ethnic majority, two specified minority groups, and a residual group, in both countries. In this way we can study whether differentiation is selective or treats other out-groups in similar ways. We quantify the in-group bias for both the ethnic majority and the ethnic minorities within both countries. We determine whether in-group favouritism comes from accurate expectations of low trustworthiness or whether it is purely taste-based. We also test in a controlled way potential treatments to reduce such bias. Differentiation often hinges upon

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[2] (Criado et al., 2015[89]) and (Johansson-Stenman, Mahmud and Martinsson, 2009[90]) reached more mixed conclusions, while (Goerg et al., 2016[91])find significant mis-calibration of beliefs, but rarely in behaviour, between three national groups. Some papers do not find any discriminatory patterns (Willinger et al., 2003[92]; Bouckaert and Dhaene, 2004[93]; Georgantzis, 2018[94]; Goerg et al., 2016[91]).

stereotypical beliefs that ethnic minorities do not share the same work ethic as the ethnic majority. People from ethnic minorities are often depicted as being lazy and taking advantage of welfare benefits (Hasso and Gilens, 2000[43]; Alesina, Miano and Stantcheva, 2018[44]). We test whether releasing information that people from ethnic minorities were economically successful alleviates discriminatory attitudes from the ethnic majority.

4. To do so, we developed a module on ethnic discrimination within the Trustlab platform, a large-scale multi-country incentivised online experiment designed to study social preferences, generalised trust and trust in institutions using experimental games ((Murtin et al., 2018[45]); (Aassve, Daniele and Le Moglie, 2018[46])). The module was implemented in the United States and in Germany on about 1 000 subjects, representative of the national population of each country. The module consists of several trust games (henceforth TGs) involving pairs of players. Both receive an endowment of 10 dollars/euros. The first mover can transfer any fraction of this endowment to a second mover. The transferred amount is multiplied by 3 and the second mover can then return any amount out of this multiplied transfer and her own endowment to the first mover. The TG puts the first mover in a situation of vulnerability with respect to the second mover, a feature that has been identified as essential for a trust relationship (Kollock, 1994[47]). Trust is an essential aspect for both social cohesion (Dragolov et al., 2016[48]) and economic development (Knack and Keefer, 1997[49]; Beugelsdijk, De Groot and Van Schaik, 2004[50]); thus it appears as an important construct to study inter-ethnic differentiation.

5. Our key experimental manipulation is to disclose the second mover's ethnic group to the first mover. In the United States, first movers from any ethnic groups are matched in random order with a non-Hispanic White (henceforth "White" for the sake of brevity), an African-American, and a Hispanic second mover. In Germany, first movers are matched in a similar fashion with a person of German parentage, a person of Turkish descent and one of Eastern European origins. We follow (Adida, Laitin and Valfort, 2014[51]) and define a person of German parentage as a person who was born in Germany and whose parents were also born in Germany. We measure the prevalence of in-group favouritism – also referred to as parochial attitudes (Romano et al., 2017[16]) – by comparing the first mover transfers across the different ethnic groups. In our study, we consider the terms discrimination/differentiation as equivalent to the term in-group bias.[3] The term denotes the difference between the transfer to people from one's in-group and people from one's out-group in our trust games. In line with previous research, we expect the bias to be positive. Since we record the first mover ethnicity, we are able to study how favouritism varies based on the ethnic types, thereby making a distinction between the discriminatory behaviour of the ethnic majority compared to ethnic minorities. We also study bias selectivity, i.e. whether first mover transfers depend on the type of out-group second movers. Are subjects more biased against one out-group compared to another? Is there an ethnic group that is discriminated against or favoured by all groups, or are bias patterns completely ethnicity-specific?

6. The second part of the experiment tests whether information on second movers' income can alleviate ethnic in-group bias. We run another round of TGs where first movers are now matched with "rich" second movers, whose incomes belong to the top 20% of the country's income distribution. We still vary the second mover's ethnicity. Ethnic majority participants are thus confronted with rich ethnic minorities, which contradicts the usual populist narrative picturing immigrants or minorities as idle welfare recipients. We also analyse how ethnic minorities react to being matched with rich people from their own or other ethnic minorities.

7. Overall, we find that members of all ethnic groups have a significant in-group bias, except participants of Eastern European descent in Germany. This bias is particularly large for African Americans in the United States, and for German parentage and Turkish descent participants in Germany. We further show that ethnic discrimination is selective in Germany. German

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[3] This paper uses indifferently the terms "discrimination" and "differentiation".

parentage subjects discriminate twice as much against Turkish descent participants as against those of Eastern European descent. On the contrary, Eastern European and Turkish descent first movers trust each other less, but trust German parentage participants similarly to how much they trust their in-group. In the United States, the ethnic groups have a more homogeneous non-selective in-group bias.

8. As we argue in Section 3.3.1, different motivations may affect the decision of how much to trust a second mover in the TG. Altruism, that is the tendency to enrich another subject at one's own expenses and without expecting anything in return, adds to trust proper, that is the willingness to "invest" an amount of money in a transaction under the expectation to earn a financial return out of that (Cox, 2004[52]). This second component is in turn affected by the expectation on the second mover's trustworthiness, which we measure eliciting first movers' beliefs over second movers' transfer. This measurement also enables us to decompose ethnic discrimination into a taste-based and a statistical-based component using first movers' beliefs regarding second movers' transfer.[4] Controlling for expected trustworthiness, we infer that 80% of the in-group bias is driven by taste-based discrimination and 20% by statistical discrimination in both countries. We further show that low trustworthiness stereotypes are mostly inaccurate, except for those concerning Turkish descent second movers, who send back significantly less money to first movers than other groups.

9. Although participants of all ethnicities reduce transfers when the receiver is known to be rich, matching participants to rich second movers attenuates ethnic differentiation. Ethnic in-group favouritism almost completely disappears except for African Americans and German parentage first movers who still favour their own in-group, even if the second mover is rich, but to a much lower extent than when income information is not released. Moreover, we uncover the existence of a "deserving rich ethnic minority effect" in Germany. German parentage participants discriminate less against rich Turkish descent second movers than against poor ones, suggesting that narratives of successful ethnic minorities could help changing stereotypes. However, we also show that this treatment can backfire and generate distrust within minority groups. In the United States, we also observe a "deserving rich ethnic minority effect" but smaller in magnitude. White Americans had a smaller in-group bias in the first place, implying probably less room for change after intervention. In the United States, the treatment does not generate any backlash within minorities. We also find that first movers belonging in the top 20% of income distribution display in-group loyalty across income lines, as they transfer to fellow top 20% income earners more than first movers from the bottom 80% of the income distribution. This income in-group bias is however significant only for German parentage subjects.

10. Our contribution to the literature is to apply experimental tools on in-group favouritism to better understand xenophobic attitudes, by designing an experiment with several unique features that are insightful in the current political context. Most of the existing studies using natural groups to analyse in-group and out-group relationships have considered interactions between residents of different countries. Only rarely has research looked at within-country relationships. When it did so, it typically involved at most two ethnic groups within a country using small or non-representative samples[5]. Our study is the first, to the best of our knowledge, to study experimentally within-country inter-ethnic relationships in large Western countries using

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[4] "Statistical discrimination" is a technical term of the academic economics literature, which characterises a choice that distinguishes among different categories of people with the *goal of maximizing money payoff*, given one's beliefs. What economists call "taste based discrimination" means differentiating with the aim of maximizing subjective utility that can *value both money but also the favouring of some groups over others* as an aim in and of itself (i.e., one derives utility from favouring some groups). The difference between the two types of discrimination comes down to what has weight in the utility function that the actor is trying to maximize.

[5] An exception is (Tanaka and Camerer, 2016[25]), who studied inter-ethnic relationships among the ethnic majority and two ethnic minorities in Vietnam rural villages.

nationally representative samples and including more than two ethnic groups. This enables us to match participants from the ethnic majority and the two largest ethnic minorities living in the country. This is relevant to understanding populist attitudes because most of the populist discourse is targeted to people from ethnic minorities. Ethnic minorities may be citizens of the country but they may be somehow portrayed as "second class citizens". Populist discourse also target potential immigrants, but in many cases potential immigrants share the same ethnicity as residents of the country, such as Hispanic Americans in the United States and Turkish descent people in Germany. Moreover, we can study the behaviour of both the ethnic majority and the ethnic minorities thanks to our large and representative samples. Studies that did use large and representative samples focused on between-country biases, without considering within-country ethnic differences (Dorrough and Glöckner, 2016[17]; Romano et al., 2017[16]) or focused on the ethnic majority within a country (Cettolin and Suetens, 2019[53]). (Romano et al., 2017[16])) have subjects from 17 countries play a TG where the nationality of the second mover varies. They find strong evidence of an in-group bias in most countries, especially in Japan and Germany. Their survey was conducted on about 100 subjects per country, which impedes the analysis of within-country in-group bias. Our paper departs significantly from their work by focusing on within-country discriminatory patterns and the interaction between ethnicity and income. Moreover, while decisions in all countries except two were hypothetical in (Romano et al., 2017[16])), all decisions are monetarily incentivised in our experiments. (Dorrough and Glöckner, 2016[17]) run surveys on representative samples from Germany, India, Israel, Japan, Mexico, and the United States, to analyse how cooperation and expectation patterns depend on the nationalities involved. They show that when the partner's nationality is known, people hold strong and transnationally shared expectations (i.e., stereotypes) concerning the cooperation level of interaction partners from other countries, expectations that are often wrong. Also, their study does not specifically focus on in-group favouritism. (Cettolin and Suetens, 2019[53]) conduct an experiment on a representative sample of the Dutch population and show that the return of trust by Dutch natives is lower for immigrants than for other natives. Their paper does not focus on trust.

11. Our focus on within-country ethnic biases is also relevant to understand social cohesion in a country (Dragolov et al., 2016[48]).There is a widespread concern that increased ethnic diversity may threaten social cohesion (Alesina and La Ferrara, 2000[54]; Putnam, 2007[55]; Algan, Hémet and Laitin, 2016[56]). Indicators of social cohesion [6] show that it is receding in the United States (Dragolov et al., 2016[48]); even if the aggregate index of social cohesion used by the authors is unchanged in Germany, the sub-component "acceptance of diversity" is indeed falling in Germany (Dragolov et al., 2016[48]).

12. The second part of our experiment contributes to the literature showing how the in-group bias is altered by the release of income information, which acts as an exogenous shock on stereotypes. This part of our design is related to the literature studying the relationship between income and trust in TGs. Several papers use endowment manipulations in the lab to investigate how income inequality affects trust (Anderson, Mellor and Milyo, 2006[57]; Lei and Vesely, 2010[58]; Smith, 2011[59]; Greiner, Ockenfels and Werner, 2012[60]). Lei and Vesely (2010[58]) introduce income inequality by varying the show-up fee of the laboratory subjects. They find that only "rich" subjects display in-group favouritism (based on income) in a trust game, while "poor" subjects send larger amounts to rich subjects. Similar to our paper, (Falk and Zehnder, 2013[61])), (Trifiletti and Capozza, 2011[62])) and (Bogliacino, Jiménez Lozano and Reyes, 2018[63])) use variation in participants' incomes outside the lab rather than lab-induced variation in order to provide more sizable and realistic income differences. (Falk and Zehnder, 2013[61]) show in a large experiment

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[6] (Dragolov et al., 2016[48]) define social cohesion as the "extent of social togetherness in a territorially defined geo-political entity". Their composite indicator is based on multiple surveys and takes several dimensions into account: social relations, connectedness and orientation towards the common good.

in Zurich that first movers in a trust game prefer sending larger amounts to second movers living in high-income neighbourhoods compared to participants from poorer locations. Studying the effect of information on real-life traits or group characteristics is an increasingly used method (Cruces, Perez-Truglia and Tetaz, 2013[64]; Kuziemko et al., 2015[65]; Alesina, Miano and Stantcheva, 2018[44]; Alesina, Stantcheva and Teso, 2018[66]). In their cross-country study, (Alesina, Miano and Stantcheva, 2018[44]) examine a condition in which immigrants are portrayed as being "hard-working", but do not find significant effects on preferences for redistribution compared to baseline. We significantly depart from previous studies, as we focus on the interaction between ethnicity and income achievement.

13. The paper is organized as follows. Section 2 describes the experimental design. Sections 3 and 4 present and discuss the results. Section 5 concludes.

2. Experimental design

2.1. Trustlab methodology

14. Trustlab is a cross-country initiative that aims at running large-scale online surveys on social preferences and trust in institutions (see (Murtin et al., 2018[45]) for more details). Participants were recruited by the same private sector polling company in every country (i.e. forming a non-random sample) and are nationally representative by age, gender and socio-economic status. It was not possible to include ethnicity as a criterion for representativeness. The surveys on the United States and Germany were conducted in early 2018.

15. The United States sample includes 1 090 subjects and the German sample 1 108. Both samples differ markedly compared to traditional student lab samples. For examples, in the United States (Germany), 55% (47%) of the subjects are over 45, and 55% (62%) are employed. Women represent about half of the sample in both countries and 30.6% (40.8%) of the subjects are in the top two income quintiles in the United States (Germany). The descriptive statistics of the samples can be found in Annex Table B.1 and Table B.2, where we also report the actual population distribution for various demographic characteristics.

16. Trustlab includes three sections. The first section consists in a series of monetarily incentivized experimental games, the second is an Implicit Association Test to measure trust in institutions while the third is a questionnaire tapping into demographic and attitudinal characteristics of participants and other measures of trust in institutions. The first game in the experimental section of Trustlab is a standard TG (Berg, Dickhaut and McCabe, 1995[67]). A first mover (A) and a second mover (B) both receive 10 dollars in the US or 10 Euros in Germany. A can send none, some, or all of her endowment to B, in multiples of 1 dollar or 1 Euro. The latter receives this amount multiplied by 3 and can send back to A any amount out of her endowment (10 dollars) augmented with the amount received from A (multiplied by 3). Participants sequentially play this TG as first mover and as second mover. This is followed by two public goods games, a dictator game, and finally a series of games that differed across countries. In this paper we focus on six TGs that were played in the United States and Germany. We refer to three of these TGs as the "Ethnicity block" and to three TGs as the "Ethnicity plus Income" block.[7]

2.1.1. Ethnic block: trust games with only ethnicity information

17. In the Ethnic block, participants are involved in a TG where we disclose the second mover's ethnicity to first movers. The first mover is truthfully informed that the second mover does not

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[7] Our results are robust to controlling for subjects' transfers in the first TG of the experimental part, i.e. the amount transferred from A to B in a TG where no information about the second mover is given (generalized trust).

know the first mover's ethnicity. Each subject in the United States is matched in random order with an African American, a Hispanic, and a non-Hispanic White second mover. In Germany, subjects are matched randomly with a subject of Eastern European descent, one of Turkish descent, and a one of German parentage. Therefore, in both countries, all participants play three TGs, each time with a person of different ethnicity.

18. We used the three largest ethnic group as prompts in each country. Own ethnic identity is determined by standard survey questions in the third module of Trustlab. In the United States, the second mover is described as being either "non-Hispanic White", "African American" or "Hispanic". We elicit the ethnic group of each subject in Trustlab's survey module where we ask participants to select the racial/ethnic group they identify the most with among a list of 12 options.[8] Table B.1 shows that these three groups constitute 71.5%, 11.2% and 11.3% of our US sample, respectively. Although our sampling strategy did not target ethnic composition, our sample is fairly close to the real United States ethnic composition, according to census data, as Table B1 shows. Nevertheless, we slightly over-represent White individuals and under-represent Hispanic ones. In Germany, ethnicity for the two minority groups is defined in the following way: "a person who was born in Eastern Europe/Turkey or whose parents were born in Eastern Europe/Turkey". We reconstruct ethnic groups in Trustlab's survey module using two questions. We asked subjects in which country they were born (using a drop-down list of countries) and in which country their mother and father were born. We classify as "Eastern Europe descent" ("Turkish descent") a subject who is either born in Eastern Europe (Turkey) or whose parents were born in Eastern Europe (Turkey). The ethnic majority, German parentage subjects, are identified as people born in Germany *and* whose parents are also born in Germany. Table B.2 shows that in Germany, ethnic minorities constitute a smaller share of the population compared to Hispanic people and African Americans in the United States. For instance, according to Statistisches Bundesamt, Turkish descent individuals constitute only 3.4% of the population. We thus decided to oversample people of Turkish origin by conducting an additional wave in June 2018, which targeted them in priority. In the end, our German sample is constituted of 80.1% German parentage subjects, 6% Turkish descent subjects and 6.5% Eastern European descent subjects (see Table B.2). For brevity of language, in the following we often refer to "people of Turkish descent" as "Turkish", to "people of Eastern European descent" as "Eastern Europeans" and to "people of German parentage" as "Germans".

19. We match first movers and second movers at the end of the experiment, not instantaneously, because we need to obtain ethnic information first. This is made possible by the use of the strategy method to elicit second mover's behaviour. First movers receive no feedback regarding second movers' responses between one trust decision and the next (see Section 2.1.3 for more details). Payments have to be made no earlier than 48 hours after the survey is completed, once we are able to match participants with the required characteristics.

20. The Ethnic block enables us to quantify the extent of the in-group bias and whether it is uniform across ethnic groups, or whether some out-groups suffer more or less discrimination. (Romano et al., 2017[16]) consider three theories that may explain differences in in-group bias across countries. The first theory argues that in-group bias thrives when institutions are inefficient or under-performing, because people from an in-group have larger incentives to cooperate with each other. The second theory argues that in-group bias should be reduced by the spread of world religions, because of the doctrine of universal brotherhood that these embrace. The third theory claims that the higher the exposure to pathogens, the higher the payoffs from in-group-based cooperation due to closer genetic proximity. Germany and the United States are quite

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[8] In the United States the question is "What racial or ethnic group do you belong to?" and the options are the following: White, African American, White Hispanic, Other Hispanic, American Indian or Alaska native, Asian Indian, Chinese, Filipino, Japanese, Korean, Vietnamese, Native Hawaiian, some other race, more than one. We merged White Hispanic and Other Hispanic to create the Hispanic ethnic group.

similar in all these three accounts[9] and given the research surveyed in the introduction, we can hypothesize that the first and third theories play a predominant role. We therefore posit:

● **H1a** *The in-group bias is significant for all the ethnic groups involved in the US.*

● **H1b** *The in-group bias is significant for all the ethnic groups involved in Germany*

21. Conversely, African Americans may perceive that United States institutions have been biased against them, and may have therefore, according to the first theory mentioned above, developed stronger in-group bias than other US ethnic groups. We therefore posit:

● **H2a** *In-group bias by African Americans is higher than in-group bias by other ethnicities in the United States.*

22. Moreover, since White Americans seem to hold more negative views of African Americans than Hispanics (see section 2.1.2), we also posit:

● **H2b** *White Americans discriminate against African Americans more than they do against Hispanics.*

23. As for Germany, one may posit that people of German parentage and of Eastern European descent may have more discriminatory attitudes against Turkish descent people, because of the religious divide between Christians and Muslims ((Adida, Laitin and Valfort, 2010[42]); (Adida, Laitin and Valfort, 2014[51]); (Valfort, 2020[68])). Religious differences have been shown to be a strong reason for out-group derogation (Brewer, 1999[9]; Putnam, 2007[55]; Bisin et al., 2008[69]).

24. We therefore posit the following hypotheses:

● **H3a** Subjects of *German parentage discriminate against Turkish descent people more than they do against Eastern European descent subjects.*

● **H3b** *Eastern European descent subjects discriminate against Turkish descent people more than they do against ones of German parentage.*

2.1.2. Ethnic plus Income block: trust games with ethnicity and income information

25. In the next series of three TGs, subjects are randomly matched to three different second movers. This time, the first mover knows both the ethnicity (each one of the three types described above) and the income of the second mover (whether their income places him or her among the top 20% of the population in the United States or Germany). This top income information is real and elicited in the third module of the survey. In this block of TGs, second movers are always top income earners, only their ethnic groups vary.

26. The Ethnic plus Income block enables us to examine whether discrimination toward out-groups – and ethnic minorities in particular – is reduced when the out-group has been economically successful. A broad range of literature argues that discrimination is at least in part based on misperceptions or stereotypes about minorities (Hasso and Gilens, 2000[43]; Alesina and Stantcheva, 2020[70]). (Hasso and Gilens, 2000[43]) extensively documented the widespread negative views held by white Americans on minorities and African Americans in particular. US citizens substantially overestimate the percentage of African Americans among the poor. The median US survey respondent believed that half of US poor were African Americans (Hasso and

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[9] According to census data from both countries, Christianity is the main religion, with 70% of US citizens, and 56% of Germans, declaring to be observant. Conversely, 22% of US citizens, and 38% of Germans declare to be unaffiliated. The share of Protestants is higher in the US (47%) than Germany (28%), while that of Roman Catholic is higher in Germany (28%) than in the US (21%). The next largest religious affiliation is Islam in Germany (5%), while less than 1% of the US population is Muslim. All other religious affiliations do not cover more than 2% of the population. Source: https://www.cia.gov/library/publications/the-world-factbook.

Gilens, 2000[43]). In reality, according to the United States Census Bureau, the percentage of poor African Americans is only around 22% of the total poor population, and there are about 10 million more poor among White Americans than among African American. Moreover, the stereotype that African Americans are lazy is widespread. In the most recent waves of the US General Social Survey (GSS), 26% of US White respondents thought of African Americans as lazy, while 20% thought of them as hard-working. In contrast, many more US Whites tend to think of Hispanics as hard-working (nearly 50%) and fewer US Whites think of Hispanics as lazy (less than 10%). Attitudes toward minorities were even more negative in the 1990s. US Whites' views about African Americans improved over the laziness dimension (which was 47% in the 1990s), but not in the hard-working dimension (which was 17% in the 1990s). On the contrary, opinions about Hispanics improved in both dimensions, as 37% and 26% of whites thought of Hispanics as lazy and hard-working in the 1990s, respectively.[10]

27. (Hasso and Gilens, 2000[43]) argue that negative beliefs about African Americans are the largest cause of US citizens' lack of support for the welfare state, as they tend to think of welfare recipients as undeserving of the help they receive. Social surveys in Germany do not ask people's opinions about ethnic minorities. We accordingly turn to (Alesina, Miano and Stantcheva, 2018[44])), who focused on attitudes toward immigrants. Since minorities are typically current or past immigrants, their findings are relevant for our experiment. (Alesina, Miano and Stantcheva, 2018[44]) show that negative views over ethnic minorities are not limited to the United States but extend to European countries including Germany. In particular, natives believe that the percentage of unemployed immigrants is more than 20 points larger than what it actually is, and that immigrants are poorer and less educated than what they actually are. Natives also believe that an immigrant is more likely to receive welfare benefits than a native in the same situation (Alesina, Miano and Stantcheva, 2018[44]).

28. Nevertheless, when immigrants do manage to be successful, most natives believe that they deserve their success. 68% of US respondents and 60% of German respondents believe that the reason for immigrants' economic success is their effort, rather than their luck. On the contrary, people tend to believe that luck played a larger role for rich natives than rich immigrants. This is the case for all five countries surveyed in (Alesina, Stantcheva and Teso, 2018[66])). In the US, only 40% of respondents believe that effort was the cause of success for rich natives.[11] Opinions differ across countries on the reasons for people being poor. In the United States, people believe that poor immigrants are less responsible for their condition than poor natives, although the difference in perception is small. In some European countries, such as France and Italy, citizens attach a much larger blame to poor immigrants than poor natives, while the blame is similar for natives and immigrants in Sweden and the United Kingdom (Alesina, Stantcheva and Teso, 2018[66]).

29. We infer from this evidence that natives substantially underestimate the chances of minorities' economic success, but think that rich people from minority groups deserve their success – even more than rich natives. Therefore, the manipulation of our Ethnic plus Income block seems potentially effective to reduce discrimination for economically successful minorities. We also

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[10] Interestingly, African Americans, too, tend to think of Hispanics as more hard-working than themselves. Within the 2016 and 2018 GSS waves, only 36% of Black American respondents think of African Americans as hard-working, while 60% of African Americans think of Hispanics as hard-working. A 10% gap also exists between African Americans thinking of African Americans as lazy (21%) in comparison with African Americans thinking of Hispanics as lazy (11%). On the contrary, in the 1990s Black Americans tended to have a better opinion of African Americans than Hispanics. It is as if African Americans' self-image got tarnished over time, while the image of Hispanics improved across the spectrum of ethnicities.

[11] Germany was not included in the survey asking about perceptions of the causes of success for rich natives in (Alesina, Stantcheva and Teso, 2018[66]), thus a comparison with perceptions about rich immigrants is not possible in Germany. It seems plausible that Germans' perceptions are not too dissimilar to those of citizens from other European countries included in the survey.

posit, for the same reasons, that ethnic minorities should reward economically successful people from ethnic minorities more than successful people from the ethnic majority, with a possible in-group bias in this respect, too. We therefore posit:

- **H4a** *In-group bias will be lower when first movers are matched with rich second movers than with people with unspecified income, both in the US and Germany, and across all ethnic groups.*

30. For the United States, we can formulate the further hypothesis that the success of African Americans should be rewarded even more by white Americans than success by Hispanics, because of the widespread opinion that African Americans are lazier and less hard-working than Hispanics. In other words, since beliefs about the average Black American are more negative than beliefs about the average Hispanic, the observation of a successful African American should lead to a larger correction of initial beliefs than the observation of a successful Hispanic, in comparison with the baseline. We then hypothesize:

- **H4b** *In-group bias by White Americans will drop more for African Americans than Hispanics in the "Ethnic plus Income" treatment compared to the "Ethnic" treatment.*

31. Given the absence of survey evidence on inter-ethnic attitudes in Germany, we cannot formulate precise hypotheses with respect to the drop in in-group bias by German parentage subjects between the two treatments.

2.1.3. Behaviour as second mover in the trust game

32. We use the data from the second decision of the experimental section of Trustlab to measure trustworthiness. As mentioned in Section 2.1, participants played a standard TG as second movers in the second experiment of this section. No information on ethnicity was given in this decision, so this measure captures the general propensity to reciprocate trust from an "average member" of the general population. We depart from the standard approach in the literature where intragroup and intergroup relationships usually refer to interactions between individuals who *all* observe others' group membership. This aspect of our design was mainly determined by the time constraints of our survey, which prevented us from running three different decisions as second movers – one for each of the first mover's ethnicity – for both the Ethnic and the Ethnic plus Income block. Nevertheless, given that many interactions occur under conditions of partial anonymity of one's identity in large-scale society, this characteristic of our design permits the study of a relevant construct.[12] The amount that the second mover decides to send back to the first mover in the TG is elicited using the strategy method: subjects have to decide how much they would send back to the first movers for each of the 11 possible decisions of the first movers.

2.1.4. Expectations

33. For the TGs of the Ethnic block, we also elicited first mover beliefs regarding the second mover trustworthiness, i.e. the amount that the first mover expects to get back from the second mover. We use the following question to elicit expectations in the United States: "Imagine you sent 5 dollars, so Participant B receives 15 dollars, making his or her total budget 25 dollars. Participant B has no information about your identity. What amount would you expect Participant B to return to you? Please enter a number from 0 to 25". We ask this question three times, once for each of the ethnicities mentioned in the Ethnic bloc. In Germany the elicitation question

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[12] We have only decisions as second mover that were taken for the generic TG, before subjects knew of the TGs to be played as first mover with knowledge of second mover's ethnicity. We truthfully inform first movers' in that module that second movers don't know their counterpart's ethnicity. When making the generic second mover decision, the participant also had no knowledge that a module referencing ethnicity would appear later. For each game, participants were matched randomly with another participant of the survey, living in the same country. They were never matched with the same participant twice.

substituted euros for dollars. Expectations are elicited between the end of the Ethnic block and the beginning of the Ethnic plus Income block. Because of time restrictions, we could not elicit expectations in the Ethnic plus Income block. Although some studies find that belief incentivisation improves beliefs accuracy (Gächter, 2010[71]), others do not find statistically significant differences (Trautmann, 2015[72]) and find that incentivized beliefs can impact on subsequent choices ((Gächter, 2010[73]); (Blanco et al., 2010[74]). Since the main variable of interest for our study was trust, we believed that not incentivizing beliefs was the optimal choice for our design. Instructions for this module and the other modules in the Trustlab survey can be found in Appendix.

2.2. Duration and payoffs payment

34. Participants were paid for the result of one randomly selected game among those played in the experimental section of Trustlab. In this way no income effect affected decisions. Each block of the experimental section had equal probability of being selected. Participants were paid in their private bank accounts, as is customary for interviewees of the poll agency. The median time needed to complete the whole Trustlab survey was 35 minutes.[13] Participants were paid on average 12 euros in Germany and 11.8 dollars in the United States. The largest possible payoff in the survey was 40 euros/dollars.

3. Results

3.1. Overview of the results

Figure 1. Size of the ethnic in-group bias by first mover ethnic group and experimental block

35. shows how the in-group bias varies between countries and ethnic groups and across both relevant experimental blocks. Here we look at the general tendency to trust people from one's in-group more than people from the out-group, without distinguishing between differences in trust toward the two out-groups (a disaggregation we discuss subsequently). For each type of first mover, we regress the amount transferred to the second mover on a binary variable indicating whether the second mover belongs to the same ethnic group. The dependent variable is standardized to have a mean equal to 0 and a standard deviation equal to 1 within each sample. We report on the graph the coefficient of the in-group dummy, by type of first mover and decision block.[14]

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[13] We judged that the necessary duration to complete the survey carefully enough was about 30 minutes. The average time to complete the survey (71 minutes) was twice as large as the median time, because some participants took a very long time to complete the survey, as is sometimes the case for online surveys. It is likely that some people took breaks from the survey. Nevertheless, such extreme cases are rare. 95% of the participants completed the survey in less than 102 minutes.

[14] See Figure A.1, Figure A.2 and Figure A.3 in Annex for raw statistics of transfers by first mover and second mover types.

Table B.4 tests whether the extent of the in-group bias is statistically different across first mover ethnic groups. More precisely, we can answer for instance the following question: are African Americans favouring significantly more their in-group compared to White first movers? To make this comparison, we compute the difference between the in-group transfer and the average of the two out-group transfers for each type of first mover. Annex

Table B.4 shows regressions of this variable on binary variables for each first mover ethnic groups and other socio-demographic characteristics. We find that although African Americans have a larger in-group bias compared to White and Hispanic first movers, the difference is not

36. Choices made when only ethnicity is known (Ethnic block) show the existence of significant in-group biases, especially among German parentage subjects and African Americans, followed by White Americans and Hispanics. The in-group bias is large for Turkish descent subjects living in Germany, but is imprecisely estimated. There is no in-group bias for Eastern Europeans descent subjects living in Germany. German parentage subjects transfer 17% of a standard deviation more money to other German parentage subjects compared to out-group second movers. This corresponds to a transfer gap of about 50 cents (out of the 10 euros endowment) between in-group and out-group. White Americans have a statistically significant but smaller in-group bias: about 5% of a standard deviation, which corresponds to a transfer gap of 15 cents.

37. Overall, the ethnic in-group bias is twice as large in Germany as in the United States. This result is confirmed in Annex Table B.3, which pools US and Germany data and interacts the in-group dummy with a binary variable indicating the country of residence of the subject. This result is mostly driven by the difference in attitudes between the majority groups. White Americans engage in in-group favouritism at a much lower rate than German parentage subjects. This result must be interpreted with caution, given that the US and German experimental designs are imperfectly comparable. In particular, the ethnic categories used in the US design were constructed upon the participant's own racial identification, while in the German one, they were constructed upon the participant's immigration history - namely, whether the participant or their parents were born abroad. We return to this comparability issue and the conclusions that should be drawn from this result in the Discussion section.

38. Once first movers additionally know that the second mover is from the top 20% (Ethnic plus Income block), the in-group bias more than halves in both countries and becomes non-significant except for German parentage and African American first movers.

39. More generally, we find significant differences in trust behaviour both between and within countries. Trust is about 7% higher in Germany than the in the United States in the trust decision where ethnicity is not specified (not shown), and about 5% higher in the trust decision where ethnicity is specified (see Figure A.2). In the latter case, we use the weighted average of decisions in the Ethnic Block, with weights given by the relative proportion of each ethnic group in real life. Both differences are statistically significant at the 1% level in two-tailed non-parametric Mann-Whitney-Wilcoxon tests. Trust in general others by German parentage subjects is also significantly higher than trust by White Americans.

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statistically significant. However Germans have a significantly larger in-group bias in both blocks (columns 3 and 4) compared to Eastern European descent first movers.

Figure 1. Size of the ethnic in-group bias by first mover ethnic group and experimental block
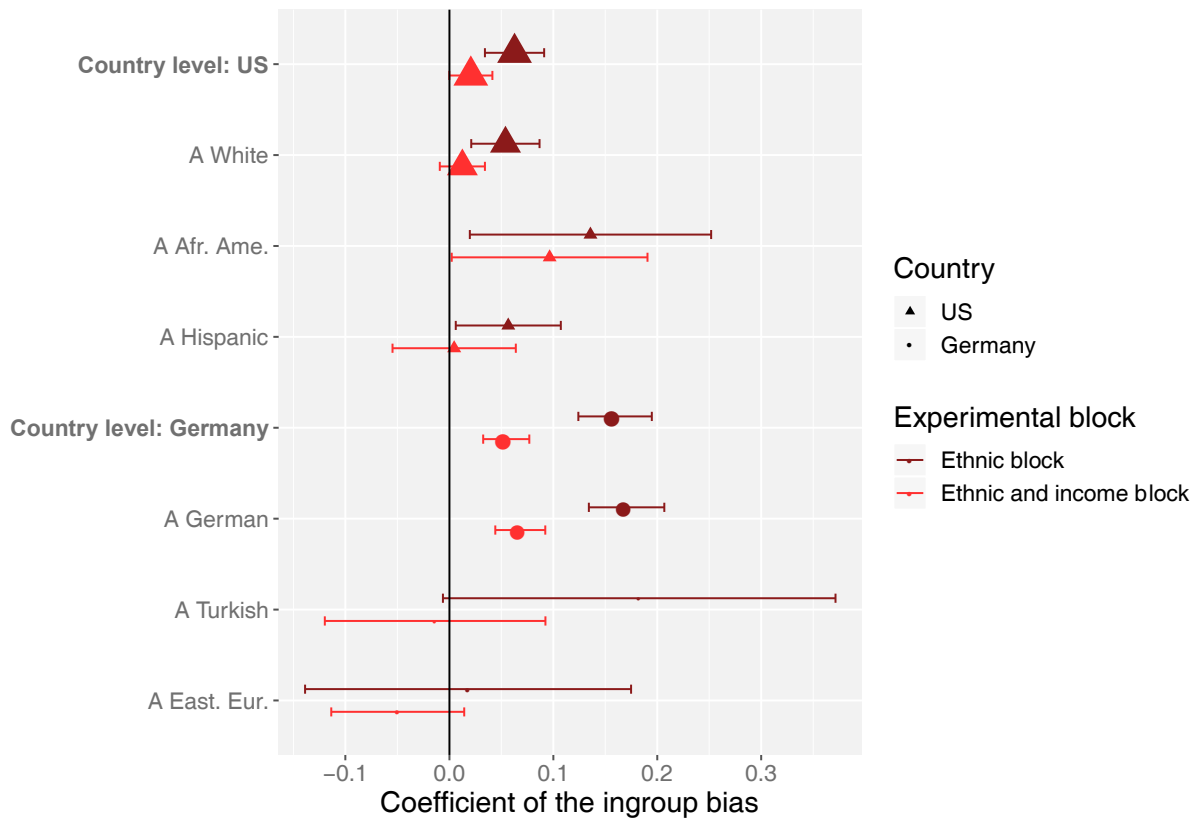
Notes: The figure plots coefficients of OLS regressions where the dependent variable is the amount transferred from the first mover to the second mover (standardized to have mean 0 and standard deviation 1 within each sample) on a dummy variable for whether the second mover is from the same ethnic group as the first mover currently making the transfer decision. We report the coefficient of this in-group dummy for different samples, depending on the country of residence and ethnic group of the first mover. The dark dots show regressions on the Ethnic block and lighter dots show the coefficients on the Ethnic plus Income block. The size of the dots is proportional to the sample size. There are 3 081 observations in the German sample (2 664 German parentage, 201 Turkish descent and 216 Eastern European descent first mover observations) and 3 072 observations in the US sample (2 337 White, 366 African Americans, and 369 Hispanic first mover observations). We control for a variable indicating whether the observation corresponds to the first second mover encountered within the block to capture any first round effects. Subject-level control variables include gender, four age groups, two income levels, two education levels and three employment category binary variables. Standard errors are clustered at the individual level (there are three observations per first mover). We report 95% confidence intervals around the coefficients.

40. In both countries, one group stands out as trusting significantly less than all others. In the United States, African Americans trust general others 13% less than White Americans and 5% less than Hispanics. All tests matching pairs of ethnic groups return the result that African Americans trust significantly less than any other group for both general trust and trust in ethnic groups - including the residual group made up of ethnicities not belonging to the three target ones, with only one exception.[15] Differences are significant at the 1% level when African Americans are matched with White Americans, or lower levels of significance in other cases. No difference is instead significant for pairwise tests between any other ethnic groups in the United States. In Germany, it is Turkish descent people who trust significantly less than all other groups. The Turkish trust general others 19% less than German parentage subjects and 18% less than

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[15] The only case in which a pairwise test including African Americans fail to reject the null of equality of distributions is that including African Americans and Hispanics in the decision on trust to general others.

Eastern Europeans. Even here, non-parametric pairwise tests reject the null of equality of distributions for any other ethnic group matched with Turkish people, while no other pairwise test between other groups rejects the null. This is the case for both trust in general others and trust in specified ethnicities. The differences are statistically significant at the 1% level in pairwise tests including Turkish and German parentage subjects and at lower levels of significance when Turkish are matched with other ethnic groups. Hence, our evidence points to one ethnic group in both countries maintaining significantly different trusting behaviours in comparison with all others.

3.2. Ethnic block

41. In this section, we describe how being confronted with ethnic diversity affects transfer levels in the TG. We first investigate whether first movers make selective transfers depending on the type of out-group second mover with whom they are matched (Section 3.2.1). We then decompose the in-group bias into a taste-based and a statistical-based component (Section 3.2.2).

3.2.1. Selective in-group bias

42. Table 1 displays the results of pooled OLS regressions on the US sample. The dependent variable is the amount transferred from the first mover to the second mover and the main explanatory variables are dummies for the ethnic group of the second mover. Each pair of columns focuses on one particular first mover ethnic group. In the first six columns, the omitted second mover ethnic variable is one's in-group, so that negative coefficients always reflect a positive in-group bias, i.e. that the participant transferred more to the in-group than the out-group. We cannot use the same procedure for other US first movers (last two columns) since they are never confronted with an in-group member. In that case, we make White the omitted category.[16] Looking at columns 1, 3 and 5, we clearly observe that White, African American and Hispanic first movers all display a significant in-group bias. This in-group bias is not selective for any group, as shown in the last row of Table 1, which reports the p-value of a t-test on the hypothesis that the two second mover ethnic group coefficients are equal to each other. For instance, in columns 1 and 2, the null hypothesis is that the coefficient of B African American and B Hispanic are the same. For any US ethnic group the null of equality of out-group coefficients is never rejected. We conclude:

- **Result 1a** *In-group bias is significant for all ethnic groups in the United States, in accordance with H1a.*

- **Result 2a** *In-group bias is larger for African Americans than other US ethnic groups, confirming H2a.*

- **Result 2b** *Discrimination by White Americans against African Americans is not different from discrimination against Hispanics, contradicting H2b.*

43. We also note that:

- **Result 2c** *In-group bias is not selective in the United States for all three ethnic groups.*

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[16] There are 40 Asian American first movers and 26 that identified with another race or ethnic category. Since there are 3 rounds per individual this yields 198 observations.

Table 1. Trust game transfers in the United States – Only second mover ethnic group is known

	A White		A African American		A Hispanic		A Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: transfers from 1st mover to 2nd mover in the trust game							
B White			-0.372**	-0.410**	-0.150*	-0.234**		
			(0.173)	(0.186)	(0.0846)	(0.103)		
B African American	-0.185***	-0.143**			-0.163**	-0.140	-0.263	-0.275
	(0.0552)	(0.0557)			(0.0758)	(0.0861)	(0.170)	(0.167)
B Hispanic	-0.126**	-0.0994**	-0.310**	-0.292*			-0.412**	-0.424**
	(0.0490)	(0.0503)	(0.143)	(0.148)			(0.180)	(0.177)
Expected transfer from B to A		0.194***		0.203***		0.264***		0.0791
		(0.0186)		(0.0414)		(0.0301)		(0.0703)
Constant	5.962***	4.277***	5.753***	3.998***	7.213***	4.713***	4.332***	3.870**
	(0.416)	(0.434)	(0.854)	(0.811)	(1.069)	(0.981)	(1.568)	(1.607)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2337	2337	366	366	369	369	198	198
R2	0.026	0.143	0.100	0.264	0.092	0.350	0.207	0.22
p-value of test H0: B ethnic group 1 = B ethnic group 2	0.138	0.280	0.571	0.308	0.869	0.231	0.187	0.178

Notes: Standard errors clustered at the individual level in parentheses $* p < 0.10$, $** p < 0.05$, $*** p < 0.01$.
Results of pooled OLS regressions using all the three decisions made by each first mover in the Ethnic block of the trust games on the US sample (only ethnicity of second mover is known). The dependent variable is the level of transfers from the first mover to the second mover. The explanatory variables are binary variables for the ethnic group of the second mover. We additionally control for a variable indicating whether the observation corresponds to the first second mover encountered (first transfer made in the Ethnic block) to capture any first round effects. Subject-level control variables (in all columns) include gender, four age groups, two income levels, two education levels and three employment categories binary variables. Columns 1 and 2 restrict the sample to White first movers, 3 and 4 to African Americans first movers, 5 and 6 to Hispanics first movers, 7 and 8 to other US first movers (Asian Americans, American Indian or Alaska Native, more than one ethnic group and other ethnic groups). The last row of the table reports the p-value of a t-test comparing the two second mover ethnic group coefficients. For instance, in columns 1 and 2, the null hypothesis is that the coefficient of B African American and B Hispanic are the same.

44. Results are markedly different in Germany (Table 2). First, the in-group bias is strongly significant at the 1% level for German parentage participants with respect to both out-groups, but is not statistically significantly different from 0 for Eastern European descent subjects. It is only significant at the 5% level for Turkish descent people against Eastern European ones, but is not significant for Turkish against Germans (see Table 2. Trust game transfers in Germany - Only second mover ethnic group is known , column 1, 3 and 5). Hence, the in-group bias seems to be concentrated in the ethnic majority in Germany. Second, the in-group bias is selective. German parentage subjects discriminate twice as much against Turkish second movers compared to Eastern Europeans second movers, the difference being significant at the 1% level (see last row of Table 2, column 1). Eastern Europeans are also selective. Even if the in-group bias was statistically insignificant against the two out-groups, it had opposite sign. Our test confirms, at the 1% level, that Eastern Europeans trust German parentage subjects significantly more than Turkish (see Table 2, column 3). In fact, Eastern Europeans are the only group in the experiment displaying out-group favouritism, as they transfer more to German parentage individuals than to fellow Eastern Europeans. Finally, first movers of Turkish descent are also selective, as they transfer more to German parentage than to Eastern Europeans subjects, the difference being in this case weakly significant. Overall, we find that Turkish and Eastern European descent first movers tend to discriminate against each other and discriminate much less against - or in fact favour – German parentage subjects, while the latter discriminate against both of them and particularly against people of Turkish descent.

Table 2. Trust game transfers in Germany - Only second mover ethnic group is known

	A German parentage		A East Eur. descent		A Turkish descent		A Other	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: transfers from 1st mover to 2nd mover in the trust game							
B German parentage			0.288	0.191	-0.363	-0.302		
			(0.249)	(0.276)	(0.326)	(0.324)		
B East Eur. descent	-0.360***	-0.242***			-0.770**	-0.641**	-0.0409	0.0468
	(0.0582)	(0.0604)			(0.316)	(0.320)	(0.113)	(0.120)
B Turkish descent	-0.628***	-0.509***	-0.396	-0.375			-0.148	-0.124
	(0.0628)	(0.0622)	(0.297)	(0.336)			(0.184)	(0.159)
Expected transfer from B to A		0.220***		0.214***		0.249***		0.217***
		(0.0167)		(0.0744)		(0.0553)		(0.0499)
Constant	6.165***	3.952***	5.869***	4.384***	5.711**	4.210**	8.200***	5.597***
	(0.548)	(0.530)	(1.581)	(1.308)	(2.155)	(1.843)	(1.539)	(2.106)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2664	2664	216	216	201	201	243	243
R2	0.035	0.151	0.207	0.296	0.084	0.243	0.209	0.335
p-value of test H0: B ethnic group 1 = B ethnic group 2	0.000	0.000	0.009	0.037	0.083	0.154	0.571	0.282

Notes: Standard errors clustered at the individual level in parentheses ∗ p < 0.10, ∗∗ p < 0.05, ∗∗∗ p < 0.01. Results of pooled OLS regressions using all three decisions made by each first mover in the Ethnic block of the Trust games on the German sample. The dependent variable is the level of transfers from the first mover to the second mover. The explanatory variables are binary variables for the ethnic group of the second mover. We additionally control for a variable indicating whether the observation corresponds to the first second mover encountered (first transfer made in the Ethnic block) to capture any first round effects. Subject-level control variables (in all columns) include gender, 4 age, 2 income level, 2 education level and 3 employment category binary variables. Columns 1 and 2 restrict the sample to German parentage first movers, 3 and 4 to first movers from Eastern Europe, 5 and 6 to first movers of Turkish descent and 7 and 8 to first movers with another ethnicity. The last row of the table reports the p-value of a t-test comparing the two second mover ethnic group coefficients. For instance, in columns 1 and 2, the null hypothesis is that the coefficient of B Eastern Europe and B Turkish are the same.

45. Results for participants in the German sample who fall into none of the three identified categories are displayed in columns 7 and 8 (labelled "Other") of Table 2. These subjects (for whom we make German parentage subjects the omitted category) show no statistically significant selective discrimination, but we may be lacking statistical power to detect a significant effect.

46. We conclude:

- **Result 1b** In-group bias is significant for German parentage subjects, but is not significant for Eastern Europeans descent and only significant for Turkish against Eastern Europeans descent but not against German parentage subjects, thus partially contradicting H1b.

- **Result 3a** German parentage subjects discriminate against Turkish descent people more than they do against Eastern Europeans individuals, confirming H3a.

- **Result 3b** Eastern Europeans descent discriminate against Turkish descent people more than they do against German parentage subjects, confirming H3b.

47. We also note:

- **Result 3c** Each German ethnic group performs selective discrimination, that is, people from one ethnic group transfer significantly more to one out-group than to the other out-group.

3.2.2. Statistical vs taste-based discrimination

48. We have documented the variations in the ethnic in-group bias in the United States and Germany across first mover and second mover types. We can decompose this bias into two components: a statistical bias and a taste-based bias. First movers may discriminate against an

ethnic group because they expect that they will receive back a lower amount from people belonging to that group in the TG (statistical discrimination), or they can prefer to transfer more to one ethnic group than another independent of any transfer expectations (taste-based discrimination).

49. To quantify the relative importance of statistical and taste-based discrimination, we control for the amount that the first mover expects to receive from each type of second mover at the end of the TG.[17] Table 3 shows regressions for the whole dataset (Germany and the United States combined) in columns 1 and 2, US only in columns 3 and 4 and Germany only in the last two columns. For all groups the return expectation is a strongly significant predictor of the transfer to the second mover, thus confirming that first movers' transfers depend on the second movers' expected trustworthiness. The coefficient of the in-group dummy (A and B belong to the same ethnic group) in column 1 can be directly compared to the coefficient of the same variable in the next column, where we control for the expected transfer from second mover to first mover. When the coefficient of the in-group variable is driven down to zero, this means that statistical discrimination is fully driving the result. But this is not the case: the in-group coefficient remains sizable when we control for the expected transfer from B to A. Pooling German and US data, we see that the coefficient drops by about 21%. Separating US and German data, we see that the drop is slightly larger in Germany (25%) than in the United States (16%).

50. We conclude:

- **Result 5** Statistical discrimination accounts for about one fifth of in-group favouritism. Taste-based discrimination is the main driver of the in-group bias.

Table 3. Statistical versus taste-based discrimination

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled data	Pooled data	United States	United States	Germany	Germany
	Dependent variable: transfers from 1st mover to 2nd mover in the trust game					
A and B same ethnic group	0.287***	0.226***	0.180***	0.151***	0.395***	0.295***
	(0.0401)	(0.0399)	(0.0534)	(0.0538)	(0.0593)	(0.0585)
Expected transfer from B to A		0.213***		0.201***		0.226***
		(0.0105)		(0.0151)		(0.0146)
Constant	5.804***	3.968***	5.855***	4.160***	5.828***	3.748***
	(0.277)	(0.276)	(0.349)	(0.353)	(0.491)	(0.475)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6594	6594	3270	3270	3324	3324
R2	0.016	0.145	0.020	0.150	0.031	0.156

Notes: Standard errors clustered at the individual level in parentheses $*$ $p < 0.10$, $**$ $p < 0.05$, $***$ $p < 0.01$. The table reports the results of pooled OLS regressions using all three decisions made by each first mover in the Ethnic block of the TGs. The dependent variable is the level of transfers from the first mover to the second mover. The explanatory variables are binary variables for whether the first and the second mover have the same ethnicity and the amount that the first mover expects to receive from the second mover in the median transfer scenario (see Section 2.1.4). We additionally control for a variable indicating whether the observation corresponds to the first round of the Ethnic block to capture any first round effects. Subject-level control variables include gender, 4 age, 2 income level, 2 education level and 3 employment category binary variables.

51. We can then assess which ethnicity (if any) drives this result within countries. The even-numbered columns of Table 1 show the impact of controlling for the expected transfer from B to A on the size of the two out-group binary variables for each first mover ethnicity in the United States. White first movers were manifestly driving the overall US results since we observe a similar drop in the size of the ethnic group binary variables (B African American and B Hispanic)

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[17] The variable is described in Section 2.1.4.

when controlling for expected transfers. This indicates that about 23% of the out-group bias toward African Americans and 21% toward Hispanics comes from statistical discrimination. In other words, lower transfers to minorities by White Americans are partly explained by low expectations on minorities' trustworthiness. On the contrary, the coefficients of B White increases in magnitude after controlling for the expected transfers in the regression for both African Americans and Hispanic first movers (columns 4 and 6 of Table 1). This means that African Americans and Hispanic first movers hold relatively high expectations on White Americans' trustworthiness, and these expectations attenuate their taste-based discrimination. Hispanic first movers send on average 15 cents less to White second movers compared to Hispanics second movers, but once controlling for expected transfers, they send 23 cents less on average.

Figure 2. Expected and actual transfer from second mover to first mover by ethnic group of the second mover, United States and Germany
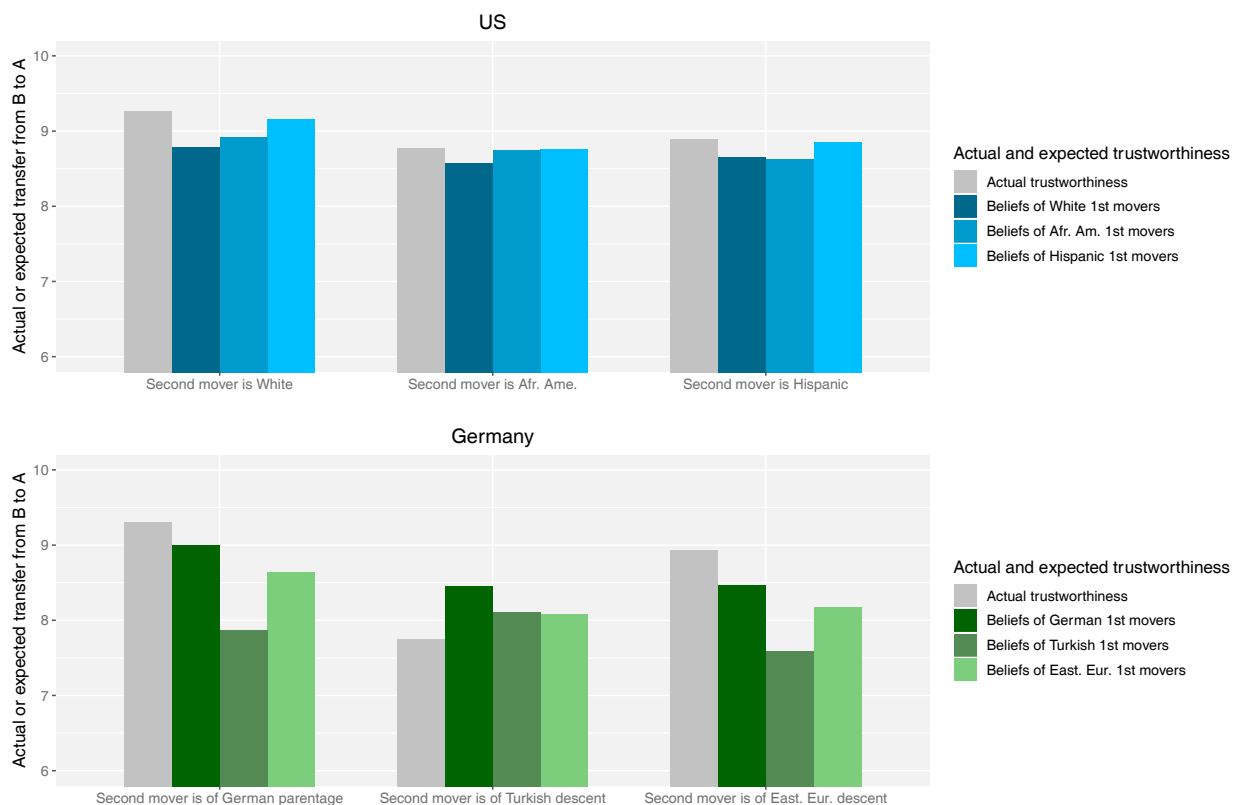
Notes: The extreme-left bar of each panel (grey bar) shows actual trustworthiness by second mover type, i.e. the amount that second movers choose to send back to first movers, in the case where first movers send 5 dollars/euros. The coloured bars show first movers beliefs (expected trustworthiness), i.e. the amount that first movers expect to receive back by second mover type, in the case where they first send 5 dollars/euros. 95% confidence intervals are reported.

52. There are no clear cut differences among first movers of different ethnicity in terms of the discrimination patterns in Germany (Table 2). All ethnic groups partly discriminate based on statistical consideration since the out-group binary variables always decrease in magnitude once controlling for expected transfers from B to A.

53. Even though discrimination is mainly taste-based, we can check whether low trustworthiness stereotypes are accurate. Figure 2. Expected and actual transfer from second mover to first mover by ethnic group of the second mover, United States and Germany plots actual and

expected trustworthiness side by side, by second mover type. Actual trustworthiness is measured at the median case scenario, i.e. the amount that second movers choose to send back to first movers, in the case where first movers send 5 dollars/euros. The remaining coloured bars show first movers beliefs (expected trustworthiness) and correspond to the amount that first movers expect to receive back by second mover type, in the case where they first sent 5 dollars/euros.

54. In the United States, second mover median transfer choices (actual trustworthiness) are not statistically different across second mover types, although they tend to be higher for White people.[18] So the 20% statistical discrimination we observed was based on inaccurate stereotypes.

55. The picture is quite different in Germany, where both actual behaviour and beliefs show larger variations across subject types. German parentage subjects have the highest trustworthiness and Turkish descent ones the lowest.[19] The latter group sends on average 16% less money to first movers compared to other subjects in the German sample, this difference being significant at the 5% level.[20] This behaviour was only partly anticipated by participants. Non-Turkish first movers expected Turkish descent participants to send back amounts 3% lower compared to the other two types of second movers, but this difference in expectations is not significant (p-value = 0.12). Interestingly, people of Turkish descent expect other Turkish to be the most trustworthy of the three groups, whereas they in fact return the lowest amount of all groups, as second movers.

3.3. Ethnic plus Income block

3.3.1. Decrease of the ethnic in-group bias with income information

56. We now add income into the picture to study its interaction with ethnic favouritism. In the Ethnic plus Income block, the second mover is always in the top 20% of the income distribution. In these three rounds the ethnic group of the second mover varies, while information on the second mover's income is held constant. As argued in Section 2.1.2, the key hypothesis we want to test is whether discrimination may be attenuated by receiving information of the "economic success" of somebody from minority groups.

57. To answer these questions, we check how transfers vary across different types of second movers, depending on the ethnicity of the first mover, focusing on the Ethnic plus Income block results only. Table 4 reports OLS pooled regressions on all the 3 transfer decisions of the Ethnic plus Income block in the United States. We regress the amount transferred by each type of first mover on out-group dummy variables. Focusing on White, Hispanic, and other US first movers, we can observe that the in-group bias is considerably reduced by information on income. White Americans' in-group bias disappears with respect to Hispanics and is reduced with respect to African Americans - though it remains weakly significant in the latter case. The t-test on equality of transfers toward out-groups rejects the null for White Americans, albeit at weakly significant

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[18] This is formally tested with a Kruskal-Wallis equality-of-populations rank test, which is a generalization of the two-sample Wilcoxon (Mann-Whitney) rank-sum. The Kruskal-Wallis test checks whether two or more samples (here three) come from the same distribution. In our context, this allows to test for the equality of the distributions of trustworthiness across the three ethnic groups. We cannot reject the null hypothesis that trustworthiness behaviour is the same across ethnic groups in the United States (p-value = 0.27). The same result holds if we take average trustworthiness across all 11 decisions that second movers make instead of the median case scenario (p-value = 0.37).

[19] A Kruskal-Wallis test rejects at the 1% level the equality in trustworthiness distributions across the three ethnic groups in Germany.

[20] The difference between Turkish descent second movers and other subjects in the German sample is even larger (20%) and significant at the 1% level, if we take the average trustworthiness across all 11 second mover decisions, instead of the median transfer (i.e. the back-transfer choice when sent the median option of 5 dollars or euro).

levels only (see Table 4, column 1, last line). This result goes against our hypothesis H4b (in Section 2.1.2) that African Americans would have benefited more in this treatment compared to Hispanics. Since White Americans tend to view Hispanics' work ethic in a more positive light than that of African Americans, we expected that correcting this belief would led White Americans to increase their transfers to African Americans more than their transfers toward Hispanics. The fact that this is not the case may be due to economically successful Hispanics being seen as more deserving than economically successful African Americans. Or it could mean that deservedness is not the only - or main - determinant of inter-ethnic discrimination by White Americans. The in-group bias by African Americans seems to be largely unaffected by the information that second movers from out-groups are economically successful. The difference in transfers toward in-group and out-group are about the same in this and the previous treatment for African Americans (see Table 1 and Table 4). The in-group bias disappears for Hispanics and other ethnic groups do not differentiate among the three main US ethnic groups.

58. Table 5 shows that the in-group ethnic bias for German parentage subjects is substantially smaller when information on belonging to the high-income group is revealed. Comparing the coefficients of Table 5 with those of Table 2 reveals that Germans' discrimination against Turkish descent second-movers drops by 64% while discrimination against Eastern European descent participants drops by 30%. As a result, German parentage subjects' discrimination against Turkish and Eastern Europeans descent is no longer different from each other when second movers are rich (see Table 5, column 1, last row). Nonetheless, the in-group bias does not disappear completely and it remains statistically significant for German parentage subjects. In-group bias is no longer significant for ethnic minorities in Germany. Interestingly, both Eastern Europeans and Turkish participants transfer more to rich Germans than to a rich in-group, the effect being weakly significant for Eastern Europeans (see Table 5, columns 2 and 3). This tendency suggests distrust by ethnic minorities toward rich people from their in-group. The raw data of Annex Figure A.1 shows that the level of transfers declines by about 20% once one knows that the second mover is rich. This gap could be motivated by three different factors. First, subjects may have purely taste-based discriminatory attitudes toward the rich. Second, they may believe that rich people are more selfish and feel less concerned about fairness or reciprocity, and hence are less trustworthy. Third, transfers to the rich could be lower than transfers to the general population as the rich are less needy than others and as transfers partly respond to altruistic concerns for the second mover (Cox, 2004[52]).[21] Time limits with the overall survey prevented us from introducing additional experimental choices or treatments to disentangle these various motivations. Nevertheless, in the next section we develop a strategy that controls for the above confounds and enables us to perform meaningful comparisons on in-group discrimination when income information is revealed.

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[21] We cannot rule out that the drop in transfers toward the rich could be partially driven by order effects, since the Ethnic plus Income block always comes after the Ethnic block. We preferred not to opt for the alternative design where the order with which the Ethnic block and the Ethnic plus Income block are presented is randomized. In those cases when the Ethnic plus Income block had come before the Ethnic block, it would have been likely, in our view, that the participant expectation over the second mover's income were still affected, in some non-obvious ways, by the information received in the previous block. This would have prevented comparability between the two blocks. In other words, it seemed more natural to move from one setting with less information to one with more information rather than the other way round.

Table 4. Trust game transfers in the United States - Second mover is rich

Ethnic plus Income block

	(1)	(2)	(3)	(4)
	A White	A African American	A Hispanic	A Other
	Dep. var.: transfers from 1st mover to 2nd mover in the trust game			
B is White and in top 20		-0.296*	-0.040	
		(0.158)	(0.120)	
B is African American and in top 20	-0.072*		0.009	0.059
	(0.041)		(0.108)	(0.091)
B is Hispanic and in top 20	-0.012	-0.313**		-0.112
	(0.041)	(0.155)		(0.125)
Constant	5.472***	3.236***	5.885***	4.122**
	(0.494)	(1.119)	(1.337)	(1.570)
Controls	Yes	Yes	Yes	Yes
Observations	2337	366	369	198
R2	0.038	0.052	0.110	0.414
p-value of test H0: B ethnic group 1 = B ethnic group 2	0.075	0.836	0.603	0.111

Notes: Standard errors clustered at the individual level in parentheses $*$ $p < 0.10$, $**$ $p < 0.05$, $***$ $p < 0.01$. Results of pooled OLS regressions using all three decisions made by each first mover in the ethnic and income block of the Trust games in the US sample. The dependent variable is the level of transfers from the first mover to the second mover. The explanatory variables are binary variables for the ethnic group of the second mover. In the ethnic and income block, all second movers are in the top 20% of the income distribution. We additionally control for a variable indicating whether the observation corresponds to the first round of the block to capture any first round effects. Subject-level control variables include gender, 4 age, 2 income level, 2 education level and 3 employment category binary variables. Column 1 restricts the sample to White first movers, column 2 to African Americans first movers, colour 3 to Hispanics first movers, colour 4 to Asian Americans first movers and column 5 to other US first movers. The last row of the table reports the p-value of a t-test comparing the two second mover ethnic group coefficients. For instance, in columns 1 and 2, the null hypothesis is that the coefficient of B African American top 20 and B Hispanic top 20 are the same.

Table 5. Trust game transfers in Germany - Second mover is rich

Ethnic plus Income block

	(1)	(2)	(3)	(4)
	A German parentage	A East Eur. descent	A Turkish descent	A Other
	Dep. var.: transfers from 1st mover to 2nd mover in the trust game			
B German parentage in top 20		0.265*	0.182	
		(0.149)	(0.238)	
B East Eur. descent in top 20	-0.253***		-0.0869	-0.0372
	(0.0471)		(0.182)	(0.0471)
B Turkish descent in top 20	-0.225***	0.0906		0.0372
	(0.0461)	(0.126)		(0.167)
Constant	4.695***	3.992	1.358	7.469***
	(0.651)	(2.845)	(2.623)	(1.908)
Controls	Yes	Yes	Yes	Yes
Observations	2664	216	201	243
R2	0.038	0.235	0.106	0.245
p-value of test H0: B ethnic group 1 = B ethnic group 2	0.442	0.240	0.177	0.635

Notes: Standard errors clustered at the individual level in parentheses $*$ $p < 0.10$, $**$ $p < 0.05$, $***$ $p < 0.01$. Results of pooled OLS regressions using all three decisions made by each first mover in the Ethnic plus Income block of the TGs on the German sample. The dependent variable is the level of transfers from the first mover to the second mover. The explanatory variables are binary variables for the ethnic group of the second mover. In the ethnic and income block, all second movers are in the top 20% of the income distribution. We additionally control for a variable indicating whether the observation corresponds to the first round of the block to capture any first round effects. Subject-level control variables include gender, 4 age, 2 income level, 2 education level and 3 employment category binary variables. Column 1 restricts the sample to German parentage first movers, column 2 to first movers from Eastern Europe, column 3 to first movers of Turkish descent and column 4 to other ethnic groups. The last row of the table reports the p-value of a t-test comparing the two second mover ethnic group coefficients. For instance, in columns 1 and 2, the null hypothesis is that the coefficient of B Eastern Europe top 20 and B Turkish top 20 are the same.

3.3.2. Normalized High-Income Bias

59. In the previous section, we performed comparisons of transfers within the Ethnic Plus Income block and found that ethnic discrimination was largely reduced when participants are provided information on the (high) income status of second movers. But this did not take into account baseline levels of ethnic discrimination. To measure the net treatment effect of our exogenous shock on the income of the second mover, we need to compare the level of discrimination in the Ethnic Plus Income block with the one of the Ethnic block.[22]

60. To fix ideas, we define the High-Income Bias ($HIB_{i,ki}$) as the difference between the transfers that a first mover of ethnic group i sends to a rich second-mover of out-group k and a rich second-mover of in-group i.

$$HIB_{i,ki} = T_{i,Rich_k} - T_{i,Rich_i} \qquad (1)$$

61. When i is the ethnic majority and k is an ethnic minority, $HIB_{i,ki}$ measures the difference in transfers that the ethnic majority sends to a rich out-group k relative to a rich in-group i. Our hypothesis H4a concerns the reduction of the in-group bias when the treatment is in place compared to when it is not in place, the treatment being the revelation that the out-group second mover has high income. For this reason, we need to subtract the in-group bias between in-group

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[22] The intuition is the same as the one underlying the difference-in-difference strategy.

i and out-group k observed in the absence of the treatment from $HIB_{i,ki}$. This leads to what we call the Normalised $HIB_{i,ki}$.

$$NHIB_{i,ki} = (T_{i,Rich_k} - T_{i,Rich_i}) - (T_{i,k} - T_{i,i}) \qquad (2)$$

where $(T_{i,k} - T_{i,i})$ is the difference between the transfers from a first mover of ethnic group i to a second mover of out-group k and a second mover of in-group i in the Ethnic block. $NHIB_{i,ki}$ would be positive if our "rich second mover" treatment effectively reduced the ethnic discrimination of the ethnic majority against the ethnic minority. This would suggest the existence of a "deserving rich ethnic minority effect".

62. Finally, we measure how i treats the ethnic out-group 1 relative to the ethnic out-group 2. In that case, we compute the Normalized High-Income Bias, $NHIB_{i,12}$ as follows:

$$NHIB_{i,12} = (T_{i,Rich_1} - T_{i,Rich_2}) - (T_{i,1} - T_{i,2}) \qquad (3)$$

63. Figure 3 and Figure 4 plot the Normalized High-Income Biases for each ethnic group, in the United States and in Germany respectively. Both NHIB(White, Afro Americans. vs White) and NHIB (White, Hispanic vs White) are positive, revealing the existence of a "deserving rich ethnic minority effect" – that is, a rise in relative trust or in appraisal of deservingness of minority group members by the majority when the latter learn that the minority members in question have high incomes. White Americans favour equally the African American rich and the Hispanic rich (positive light and medium blue bars of the left panel). NHIB (White, Afro American vs Hispanic) is thus close to zero.
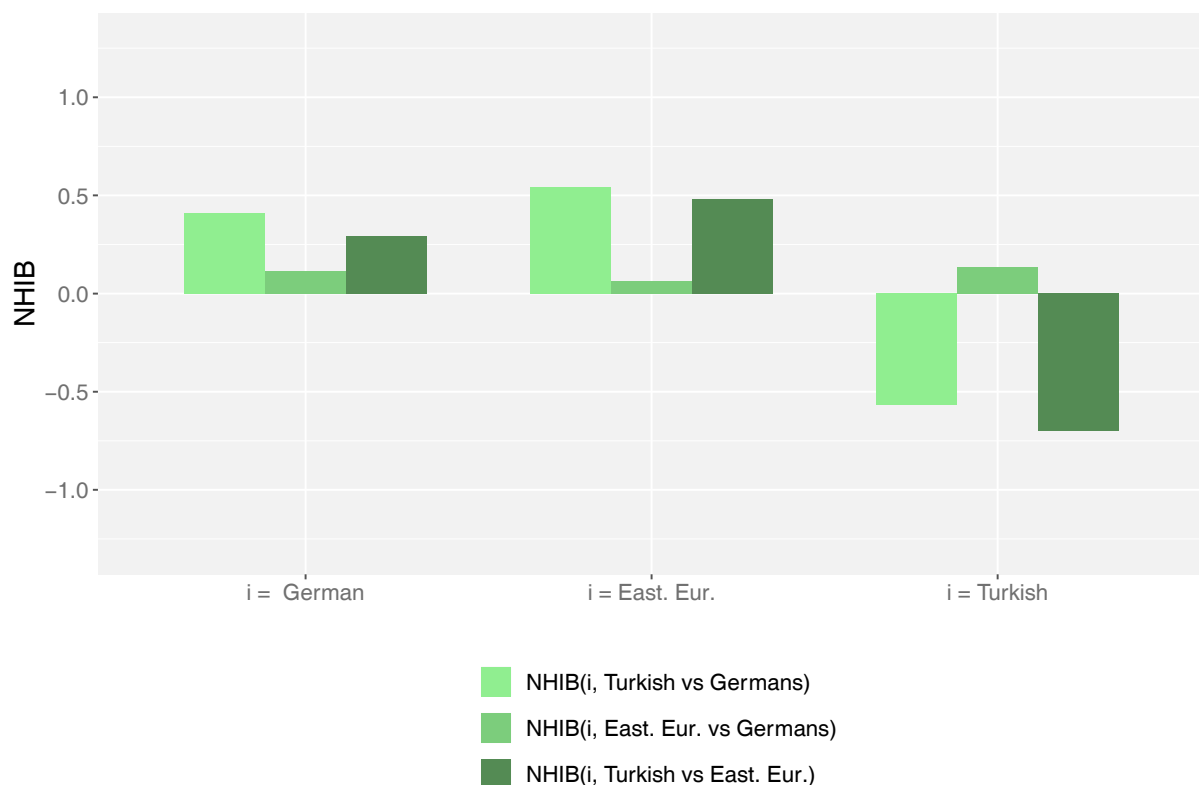
Figure 3. Normalized High-Income Bias by first mover ethnicity in the United States
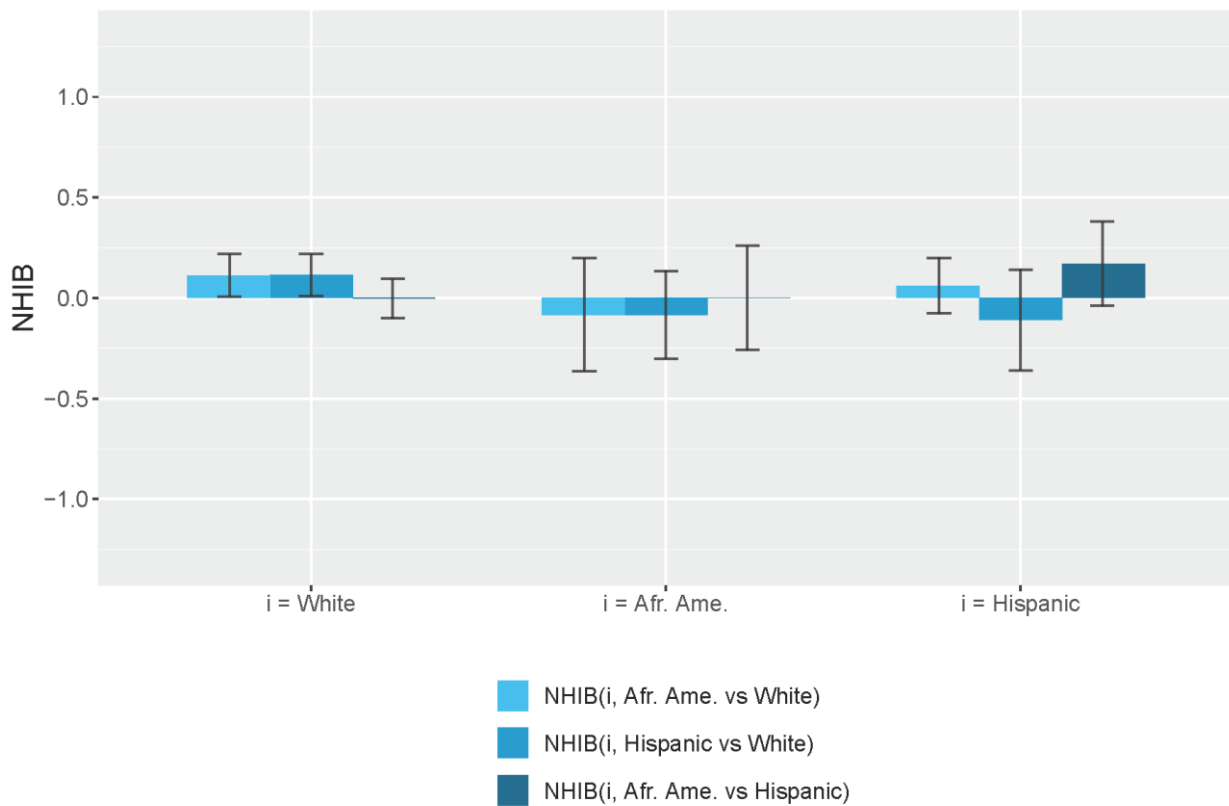
Note: The figure plots the Normalized High-Income Biases computed using Equations (2) and (3) by type of first mover i in the US sample. We report 95% confidence intervals.

64. Figure 4 shows the Normalized High-Income Biases in Germany. The size of the NHIBs appears overall larger than in the United States, meaning income information causes a greater reduction in discrimination against the out-groups.[23] NHIB (German parentage, Turkish descent vs German parentage) is larger than NHIB (German parentage, East. Eur. Descent vs German parentage), only the first bias being statistically significantly different from zero. Hence, unlike the United States, the NHIB of the ethnic majority is selective in Germany. Turning to NHIB's of the ethnic minorities with respect to their own out-groups, these appear sizable, but in an unexpected direction. The rightmost panel of Figure 4 shows that NHIB (Turkish descent, Turkish descent vs German parentage) and NHIB (Turkish descent, Turkish descent vs East. Eur. descent) are both negative. In other words, Turkish first movers transfer less to a rich Turkish descent individual than they transfer to a rich German parentage or a rich Eastern European descent individual, in comparison to baseline. There is in fact no significant difference in the NHIB toward the other two ethnic groups by Turkish descent first movers (middle bar of the rightmost panel). The existence of an NHIB of Turkish descent participants toward both ethnic majority and Eastern Europeans suggests a general mistrust by Turkish descent people. Eastern Europeans have a positive, and statistically significant, NHIB toward Turkish descent people relative to German parentage ones, while they treat their own rich in the same manner as they treat Germans. This also means that Eastern Europeans have a more positive NHIB toward Turkish relative to that of Eastern Europeans themselves, though this effect is not statistically different from zero at conventional levels.

Figure 4. Normalized High-Income Bias by first mover ethnicity in Germany

Note: The figure plots the Normalized High-Income Biases computed using Equations (2) and (3) by type of first mover i in the German sample. We report 95% confidence intervals.

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[23] The larger reduction of discrimination in Germany can be partly driven by the fact that the discrimination had been larger in Germany in the first place, so there was more room for intervention.

65. We conclude:

- **Result 4a** Releasing information that second movers are economically successful in real life significantly reduces the in-group bias, confirming H4a.

- **Result 4b** The "deserving rich ethnic minority effect" of White Americans toward African Americans is no larger than the one toward Hispanics, contradicting H4b.

66. Moreover:

- **Result 4c** The "deserving rich ethnic minority effect" of German parentage subjects is larger toward people of Turkish descent than toward Eastern Europeans.

- **Result 4d** Participants of both Turkish and Eastern European descent transfer more to rich out-groups than to rich in-groups.

67. Finally, it must be kept in mind that members of each ethnic group send less, not more, on average to a second-mover who is in the top 20% by income than to one for whom income information is not given. Thus NHIB or "deserving rich effects" play out against a backdrop of generally lower sending to high earners, lowering discrimination against the rich of ethnic minorities relative to the general discrimination against high income second movers, rather than of absolutely larger sending to rich ethnic minorities than to others (see the end of Section 3.3.1).

### 3.3.3. Income in-group bias

68. So far we have considered ethnicity as the relevant source of identification to tell apart in-groups and out-groups. However, people may identify with different groups at the same time and many people experience multiple identities (Brewer, 1999[9]). The Ethnic plus Income block made income salient in addition to ethnicity, by portraying a rich second mover. We conjecture that income may have been a source of identification for first movers who are rich in real life. If this was the case, then we should observe favouritism by rich first movers toward rich second movers, especially if they come from the same ethnic group. We test for this hypothesis in this section.

69. Figure 5 investigates the existence of an in-group bias based on income rather than ethnicity. It shows how transfers depend on the first mover income level (either top 20% or bottom 80%) and on the information delivered regarding the second mover income (no information in the top panel and the second mover is in the top 20% in the bottom panel). Rich first movers transfer significantly larger amounts than bottom 80% subjects. All subjects decrease their transfers when the second mover is known to be rich, but rich first movers do so to a lesser extent than bottom 80% first movers.

70. To investigate this question more systematically, Table 6 shows the respective effects of ethnic in-group ("A and B belong to the same ethnic group") and income in-group (with the variable "A top 20%"), using Ethnic plus Income block data only. This latter variable enables us to check how rich first movers treat other rich second movers, compared to what bottom 80% first movers do. The last line of the table shows the p-value of a t-test for the equality of both coefficients. It tells us whether the income in-group bias has the same size as the ethnic in-group bias. We show the results for all ethnic groups for completeness but the reader should keep in mind that most top 20% first movers in our sample are from the ethnic majority.[24]

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[24] In fact, we have only 10 African Americans, 14 Hispanic, 6 Turkish descent and 14 Eastern European descent subjects that are within the top 20% of their respective national income distribution. So the coefficient of the variable "A top 20%" should be interpreted cautiously for columns 2, 3, 4 and 5 of Table 6.

Figure 5. Transfer decisions from first mover to second mover in the United States and Germany by first mover income
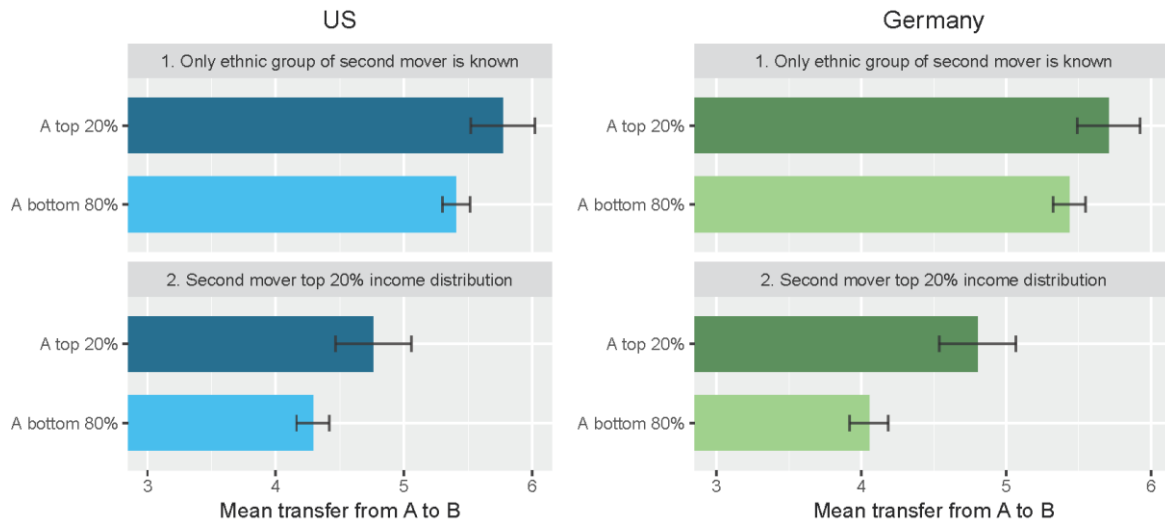
Notes: The bars display the average level of transfers by first mover income (either top 20% of the income distribution or bottom 80%) pooling over the whole US sample for the left panel and the whole German sample for the right panel. The upper part displays Ethnic block transfers (only ethnicity is known) and the lower part shows Ethnic plus Income block transfers (the second mover is additionally in the top 20% of the national income distribution). 95% confidence intervals are reported.

71. Our analysis shows that the hypothesis of a significant income in-group bias is rejected for all ethnic groups except for German parentage participants. In Germany, the top 20% subjects from the ethnic majority transfer almost one euro more to rich people compared to the amount that bottom 80% first movers choose to transfers to top 20% subjects. Furthermore, for Germans, the size of the income in-group bias is almost four time larger than the magnitude of the ethnic in-group bias, and this difference is significant at the 5% level (last line of Column 4 of Table 6). We do not find a significant income in-group bias for White Americans. Although both the ethnic in-group variable and the income in-group variables show positive coefficients (suggesting an in-group bias in both cases), they are not significant. These results should be interpreted cautiously since the ethnic in-group bias is much smaller in the Ethnic plus Income block than when only ethnicity is disclosed.

Table 6. Comparison of the in-group ethnic bias and the in-group income bias when second mover is in top 20% by income

	United States			Germany		
	A White	A African American	A Hispanic	A German	A East. Eur. descent	A Turkish descent
	(1)	(2)	(3)	(4)	(5)	(6)
	Dep. Var.: transfers from 1st mover to 2nd mover in the trust game					
A Top 20%	0.191	-0.0704	0.0305	0.992***	-2.552*	0.154
	(0.338)	(1.048)	(0.929)	(0.291)	(1.372)	(1.485)
A and B belong to the same ethnic group	0.0426	0.305**	0.0158	0.239***	-0.177	-0.0475
	(0.0377)	(0.151)	(0.104)	(0.0429)	(0.116)	(0.187)
Constant	5.064***	3.127***	5.508***	3.702***	6.383**	1.141
	(0.473)	(1.116)	(1.316)	(0.625)	(2.786)	(2.346)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2337	366	369	2664	216	201
R2	0.033	0.051	0.072	0.044	0.252	0.104
p-value of test H0: Income in-group bias = Ethnic in-group bias	0.662	0.726	0.988	0.011	0.087	0.894

Notes: Standard errors clustered at the individual level in parentheses $*$ $p < 0.10$, $**$ $p < 0.05$, $***$ $p < 0.01$. Results of pooled OLS regressions using all three decisions made by each first mover in the ethnic and income block of the Trust games in the US sample (columns 1 to 3) and the German sample (columns 4 to 6). The dependent variable is the level of transfers from the first mover to the second mover. The explanatory variables are binary variables for whether the first mover has an income within the top 20% of the distribution and whether A and B belong to the same ethnic groups. In the Ethnic plus Income block, all second movers are in the top 20% of the income distribution. We additionally control for a variable indicating whether the observation corresponds to the first round of the block to capture any first round effects. Subject-level control variables include gender, 4 age, 2 education level and 3 employment category binary variables. The last row of the table reports the p-value of a t-test comparing the size of the income in-group bias (A top 20% coefficient) with the size of the ethnic in-group bias (A and B belong to the same ethnic group coefficient).

72. To deal with this issue, we can compare the ethnic bias with the income bias by pooling the results of the 6 TGs from the Ethnic block and the Ethnic plus Income block. Do rich first movers transfer higher amounts in the Ethnic plus Income block compared to the Ethnic block, relative to the amount transferred by bottom 80% first movers? Table 7 shows pooled OLS regressions using all six decisions made by each first movers in the TGs. The large and negative coefficient of the variable "B top 20%" indicates that participants decrease on average their transfers between both blocks. In the United States, the null effect of the interaction term "B top 20% X A top 20%" indicates that first movers with different income levels do not behave too differently. However, in Germany, the behaviour of rich vs non-rich first movers is more polarized. They all tend to decrease their transfers when the second mover is among the top 20% of the income distribution, but rich participants decrease their transfers much less. On average, in Germany, top 20% first movers decrease their transfers by about 0.8 euros between the two blocks, while first movers within the bottom 80% of the national income distribution decrease their transfers by 1.29 euros. The difference is significant at the 1% level.[25]

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[25] This income in-group bias in Germany is driven by first movers from the ethnic majority and is stronger if the second mover is from a different ethnic group (not shown). This is consistent with the positive Normalized High-Income Bias (deserving rich ethnic minority effect) we documented above.

Table 7. In-group bias based on income

	(1)	(2)	(3)
	All	United States	Germany
	Dep. Var.: transfers from 1st mover to 2nd mover in the trust game		
A Top 20%	0.223	0.125	0.368*
	(0.160)	(0.239)	(0.214)
B top 20%	-1.183***	-1.095***	-1.282***
	(0.0590)	(0.0784)	(0.0886)
B top 20% X A Top 20%	0.297**	0.108	0.476***
	(0.127)	(0.193)	(0.171)
A and B belong to the same ethnic group	0.191***	0.130***	0.252***
	(0.0346)	(0.0476)	(0.0497)
Constant	5.575***	5.720***	5.314***
	(0.276)	(0.346)	(0.502)
Controls	Yes	Yes	Yes
Observations	13188	6540	6648
R2	0.051	0.049	0.067
p-value of test H0: Income in-group bias = Ethnic in-group bias	0.419	0.911	0.207

Notes: Standard errors clustered at the individual level in parentheses $* p < 0.10$, $** p < 0.05$, $*** p < 0.01$. Results of pooled OLS regressions using all six decisions made by each first mover in the Ethnic block and the ethnic and income block of the Trust games. The dependent variable is the level of transfers from the first mover to the second mover. All regressions include the following binary variables. A belongs to Top 20% is equal to 1 if the first mover is from the top 20% of the income distribution. B belongs to top 20% is equal to 1 if the decision was made in the ethnic and income block (second mover is rich). The third variable is an interaction of the two. The next variable is an ethnic in-group variable equal to 1 if the first mover and the second mover belong to the same ethnic group. We additionally control for two binary variables indicating whether the observation corresponds to the first round of the Ethnic block and the Ethnic plus Income blocks, to capture any first round effects. Subject-level control variables include gender, 4 age, 2 income level, 2 education level and 3 employment category binary variables. Column 1 considers the US and Germany jointly, columns 2 and 3 focus on the US and German samples respectively. The last row of the table reports the p-value of a t-test comparing the two in-group bias coefficients (A and B belong to the same ethnic group and the income-group bias, i.e. the interaction between B top 20% and A top 20%).

73. We run a test for the equality of the income inequality bias coefficient (the interaction between A bottom 80% and B Top 20%) and the ethnic out-group bias coefficient. Although the income bias is almost twice as large as the ethnic bias in Germany, the test for equality of coefficients does not find the difference significant at conventional levels.

74. We conclude:

- **Result 6a** *Rich German parentage subjects transfer significantly more to fellow rich Germans than do non-rich Germans. This "income-based" in-group bias is economically but not statistically significantly larger in magnitude than is the ethnic out-group bias, and does not hold for other ethnic groups.*

- **Result 6b** There is no statistically significant in-group bias based on income in the United States.

3.3.4. Gender Effects

75. (Romano et al., 2017[16]), (Fershtman and Gneezy, 2001[18]) and (Ahmed, 2010[23]) all find significant gender effects, in that men display a larger in-group bias than women. The meta-analysis by (Balliet, Wu and De Dreu, 2014[10]) demonstrates that studies containing more (if not all) men than women yield larger intergroup discrimination. We also find evidence of a gender effect in our experiments. As shown in

76. Table B.4, overall men have a significantly larger in-group bias than women. However, this result is only significant in the United States and in the Ethnic block.

4. Discussion

77. Our analysis has shown substantial variation in in-group bias across countries and across conditions. The first obvious question to a study of this kind concerns the external validity of our results. To what extent can we be sure that our results reflect attitudes and preferences that hold outside of the research medium that we used? This is of course a very general question. Some have expressed concerns about whether experiments that are not run in natural conditions can be generalized (Levitt and List, 2007[75]). Others have argued that experiments permit incentive-compatible elicitation of human preferences (Falk and Heckman, 2009[76]), and that experiments' results generalize to field settings (Camerer, 2015[77]; Herbst and Mas, 2015[78]). Ultimately, we share the view of (Falk and Heckman, 2009[76]) that even if non-natural experiments may suffer from so-called experimenter demand effects or social desirability biases, they are nonetheless valid instruments of research that should complement evidence coming from other methods.[26] Moreover, our findings are likely to be of greater general validity for the issues we study than are average lab experiments since they are obtained using samples that are more representative with respect to age, occupation and income than is often the case.

A striking result of our paper is the higher rate of discrimination observed in Germany compared to the United States in our experiment. Can we infer that this pattern of preferences also holds in reality? Or could it be the case that US participants are more sensitive to social desirability than the Germans, possibly because the social stigma – or internal guilt – associated with manifesting discriminatory preferences toward the groups in question may be higher in the United States than Germany?

78. First of all, we have to bear in mind the big differences in the history of inter-ethnic relationship in the United States vis-a-vis Germany. The Black/White racial divide has a complex history since the arrival of African Americans' as slaves in the 17th century and the mixed record of emancipation and integration into the society as equal members. Tensions over large scale Hispanic immigration and American Whites' discomfort over widespread use of Spanish in Latino communications are more recent and more complex to deconstruct. The immigration of Turkish and Eastern Europeans to Germany began much later, in the second half of the 20th century, and the reasons were partially different. Turkish people were mainly "guest workers" migrating for economic reasons, while some – though not all – Eastern Europeans escaped war zones after the break-up of Yugoslavia. We may conjecture that in the US survey respondents may feel more restrained in revealing their real attitudes than people in Germany, given possibly different ideas of what is politically correct. Or Germans may be less concerned with their self-image than Americans. In what follows, we address these concerns further analysing our data, although we hasten to say that we can only offer speculative answers.

79. By construction, non-discriminating individuals are those who transfer the same amount of money to second movers, regardless of their ethnicity. In fact, we find a significantly larger percentage of US participants (76%) who transfer exactly the same amount to second movers, regardless of their ethnicity, in comparison to German ones (56%), as shown in the last lines of Annex Table B.1 and Table B.2.

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[26] Experimenter demand effects and social desirability bias can be defined as the tendency of participants in surveys or experiments to manifest patterns behaviour that they perceive as being expected by the experimenter, or socially desirable (Zizzo, 2010[96]) and (De Quidt, Haushofer and Roth, 2018[97]).

80. A preliminary conjecture is that this result is caused by differing degrees of attention. One could think that some first movers were less attentive and selected the same transfer to finish the survey early. We would then underestimate the extent of discrimination. We can discard this explanation. Figure 6 shows the distribution of the total time used to complete the whole Trustlab survey divided by people choosing (at least once) different amounts across ethnic groups and subjects sticking to the same transfers within each block. The distributions are nearly identical, suggesting that both types of subject do not differ in the total time they took to answer the survey. This is also the case if we plot the distributions separately for both countries (not shown). A more formal test confirms this visual interpretation. We cannot reject the null hypothesis of no difference between both distributions using a Kolmogorov-Smirnov test on the whole sample (p-value = 0.183). And this holds true when running the Kolmogorov-Smirnov test separately on the US sample and on the German sample.

81. Another potential explanation is that subjects always choosing the same transfers may still be racially biased but hide their true preferences from the experimenter, out of image concerns and social desirability bias. One could argue, however, that the social distance with the experimenter is higher in an online experiment than a laboratory one, which should diminish social desirability bias. We show in Annex C that differences in TG transfer decisions correlate in an intuitive way with answers to traditional questions of Trustlab's survey module. For instance, people declaring a low racial bias in survey questions are also more likely to send the same transfers to all second movers, regardless of their ethnicity. Of course this piece of evidence cannot prove that the extent of people hiding their discriminatory attitudes was limited. At best, it shows some "consistency" in the way "hiding" discriminators behaved throughout the survey.

Figure 6. Time taken to complete the survey by type of transfer decisions
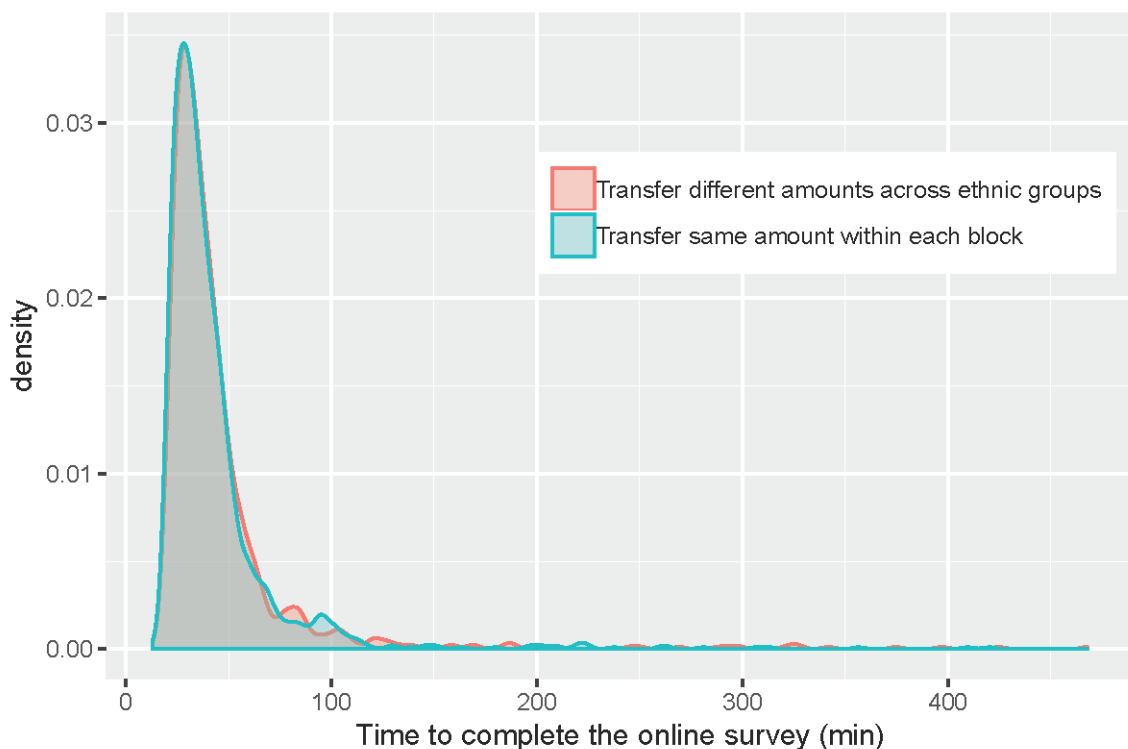
Notes: The figure shows the distribution of the time to complete the whole Trustlab survey, in minutes, keeping only duration smaller than 500 minutes and pooling over the US and German sample. The graph plots two distributions: the blue one corresponds to the 1 202 subjects that always transferred the exact same amount within each block. The red one is for the 996 subjects that sent at least once different amounts across two second movers (in both blocks).

82. The fact that German parentage subjects are selective in their bias, discriminating more against Turkish descent subjects than against Eastern European descent ones, is not too surprising. The growing support of political parties and social movements that put at the core of their agenda the protection of the country against the perceived risk of "Islamisation", in Germany as well as in other European countries, mirrors the in-group biases that we observe in our experiment. It suggests that social desirabilty bias may be limited in Germany. Moreover, a higher in-group bias in Germany than the United States also emerges in (Romano et al., 2017[16]). It could be the case that the US data only show the lower bound of discrimination, thus enlarging the difference between the United States and Germany. Even so, the size of the difference is such that the notion that it is exclusively caused by differences in social desirability biases or in views of "political correctness" in the two countries is implausible.

83. One may also question the lack of selective in-group bias in the United States. We expected higher White Americans' discrimination against African Americans than Hispanics. Even in this case, because of historical reasons, social desirability bias might demand treating African Americans on a par with Hispanics. We cannot oppose any firm counterargument to this objection, except for noting that we do find some form of selective in-group bias in the Ethnic plus Income block even among White Americans. Ultimately, we believe that our research has uncovered previously unexplored patterns of in-group bias, and that further research should refine our understanding of these topics.

84. Our design in the Ethnic plus Income block was inspired by the idea that discrimination is often associated with the belief that ethnic minorities are relatively unsuccessful in economic activities. We showed that discrimination is significantly reduced when people from the ethnic majorities are faced with successful ethnic minorities. This finding is potentially relevant for policy. It suggests that spreading stories of economic success by ethnic minorities may reduce discrimination, because it reduces the stereotype that ethnic minorities inevitably fall into the categories of the "undeserving poor". Stories of individual success may be spread at various levels - by the press, the government, at schools, and through the entertainment industry – e.g. in TV serials or films. Shaping more desirable individual behaviour through the portrayal of "success stories" or "role models" has been proven to be an effective way to, for instance, improve healthy behaviour, increase financial literacy, and knowledge about a public works program (Banerjee, Barnhardt and Duflo, 2015[79]; Banerjee, La Ferrara and Orozco Olvera, 2019[80]; Ravallion et al., 2015[81]; Berg and Zia, 2017[82]). We posit that the same could be the case with respect to inter-ethnic discrimination. This manipulation could be a way to break the "vicious circle" conjectured by (Adida, Laitin and Valfort, 2010[42]) to explain patterns of discrimination in Christian-heritage societies. In their analysis, native ethnic majorities discriminate against ethnic minorities - especially Muslims – because of perceived lack of willingness to integrate, and ethnic minorities do not integrate because of perceived discrimination.

85. There are two important caveats in our policy recommendation. First, even if people may accept that some individuals from ethnic minorities have been successful, they may still refrain from updating their beliefs about the group as a whole. As shown in psychology research (Kunda and Oleson, 1995[83]; Yzerbyt, Rocher and Schadron, 1997[84]), when individuals are confronted with new evidence purportedly contradicting previously held stereotypes about a group, they might further typify the group into "virtuous" members and "non-virtuous" members, so that the additional evidence does not lead to significant belief updates. For instance, the group of successful people from ethnic minorities may be typified as the group of "business-people in the ethnic minority". The positive treatment reserved to this group may fail to extend to the rest of the ethnic minority. This resistance to removing stereotyping may reduce the size of the effect on discrimination reduction. However, it offers a basis to update beliefs in a direction consistent with reduction of discrimination.

86. The second caveat concerns the observation that ethnic minorities in Germany seem not to trust successful people of their own ethnic group. This may point to a breakdown of internal trust and internal cohesion if "role model" or "success stories" from ethnic minorities are diffused through the media. Our experiments could not analyse the underlying reasons for this behaviour. We do not know if it was due to envy, or to genuine mistrust toward co-ethnic rich, or to some other factor. It also has to be added that, while Turkish identity was arguably a meaningful source of attachment for participants in our study, it is probably less the case for Eastern European descent subjects, given that this group encompasses many different national groups for whom a shared sense of identity may be less developed or lacking altogether. In this case, too, more research is needed to quantify and understand the nature of this effect and whether it may disrupt social capital within ethnic minorities.

87. Another result that stands out is the significantly lower trust and trustworthiness by the only recognizable Muslim group in our sample – people of Turkish descent in Germany. Even if this result is only partially anticipated by others and only plays a small part in discrimination by the ethnic majority, it signals the persistence of significant cultural differences between people of Turkish descent and the rest of the population. This confirms results from other studies showing sluggishness in cultural convergence between immigrant groups and natives (Guiso, Sapienza and Zingales, 2006[85]; Bigoni et al., 2019[86]), or between different cultures within a country (Guiso, Sapienza and Zingales, 2016[87]). Cultural convergence by Muslims seems to be particularly slow (Bisin et al., 2008[69])A conjecture to explain such sluggishness is that minorities' social networks, instead of including people from the ethnic majority, remain mainly confined to other immigrants. Since both trust and trustworthiness are essential components of social capital (Putnam, 2007[55]), increasing trustworthiness by immigrant groups would seem a goal worth pursuing. However, it is not clear how this can be achieved, except for stimulating interactions across different ethnic groups.

5. Conclusions

88. The goal of this paper has been to investigate levels of inter-ethnic trust in the United States and Germany, focusing on the three main ethnic groups within each country. The general picture that emerges is one of substantial differences in inter-ethnic relations, both cross-country and within-country.

89. Within countries, while all ethnic groups, except Eastern Europeans living in Germany, show an in-group bias, there are large differences in the extent and direction of the bias. In Germany, the ethnic majority holds the strongest in-group bias and discriminates against Turkish descent subjects about 1.75 times more than against Eastern Europeans. In turn, people of Eastern European and Turkish descent favour their in-group over the other ethnic minority but do not discriminate against German parentage subjects. In the United States, African Americans have the largest in-group bias, but White and Hispanic first movers' in-group biases are significant, albeit smaller. Unlike Germany, American Whites do not treat members of the two minority groups differently from one another. We show that in both countries, about 80% of the discrimination is taste-based rather than based on differing expectations of trustworthiness.

90. Our design further tests how interacting with successful ethnic minorities may reduce the bias of the ethnic majority. In the Ethnic plus Income block, we match first movers to second movers within the top 20% of the income distribution and let the ethnic group of the second mover vary. Our treatment acts like an exogenous shock on the negative stereotypes from which ethnic minorities often suffer. The treatment successfully changes behaviour of German parentage subjects, as they reward rich Turkish substantially more than rich Eastern Europeans. This treatment also reduces White Americans' in-group bias, but the effect is smaller and seems to favour Hispanics more than African Americans. However, the treatment leads to the unexpected

result that ethnic minorities in Germany distrust rich people from their own ethnic group. Finally, we document significant and large favouritism by rich German parentage subjects toward fellow rich Germans in comparison with low-income Germans. This effect does not extend to other ethnic groups.

91. Overall, the variety of inter-ethnic relations presented in this paper and the differences in the response to our intervention suggest that the policy-maker's task, if aiming to reduce to reduce discrimination, increase social cohesion and tame the populist surge, entails complex challenges. First of all, discrimination and in-group bias is ubiquitous and common not just to ethnic majorities, but also ethnic minorities - with the exception of Eastern Europeans in our sample. Second, discrimination can be selective, either in its basic form or in the response to an intervention; hence, the policy-maker should have a clear map of the actual state of inter-ethnic relationships and might want to differentiate the type of intervention depending on the ethnicities involved. Third, the behaviour of people of Turkish descent and German parentage subjects is reminiscent of the vicious circle proposed by (Adida, Laitin and Valfort, 2010[42]) to explain inter-ethnic relations in France. Many German parentage subjects mistrust people of Turkish descent, mainly out of taste-based rather than statistical discrimination. In turn, people of Turkish descent are at the same time less trusting and trustworthy compared to other ethnic groups. A similar situation occurs in the United States with respect to African Americans, albeit less markedly. African Americans trust others much less than other ethnic groups, although their level of trustworthiness is on a par with others. The persistence of these behavioural differences, which arguably can be construed in terms of cultural differences, is worrying and can provide an easy ground for populist messages to spread. There is nonetheless some hope. Our intervention of showing examples of success from the ethnic minority does reduce discrimination substantially and, in Germany, benefits especially people of Turkish descent. As argued in the previous section, more testing is needed to ascertain whether this intervention leads to the generalised removal of stereotypical views that ethnic minorities lack work ethic, or remains limited to successful people. Moreover, even if this intervention is successful for the ethnic majority, it may disrupt social cohesion within the ethnic minority.

92. As argued by (Putnam, 2007[55]), inter-group relationships can move at a glacial pace over time, but they can undoubtedly improve. This is however not a foregone conclusion. The populist surge represents a setback in this progress by making ethnic demarcations more salient. Our paper contributes to this debate by bringing novel empirical evidence on the mapping of inter-ethnic relationships in two large Western countries, and highlighting possible avenues for interventions.

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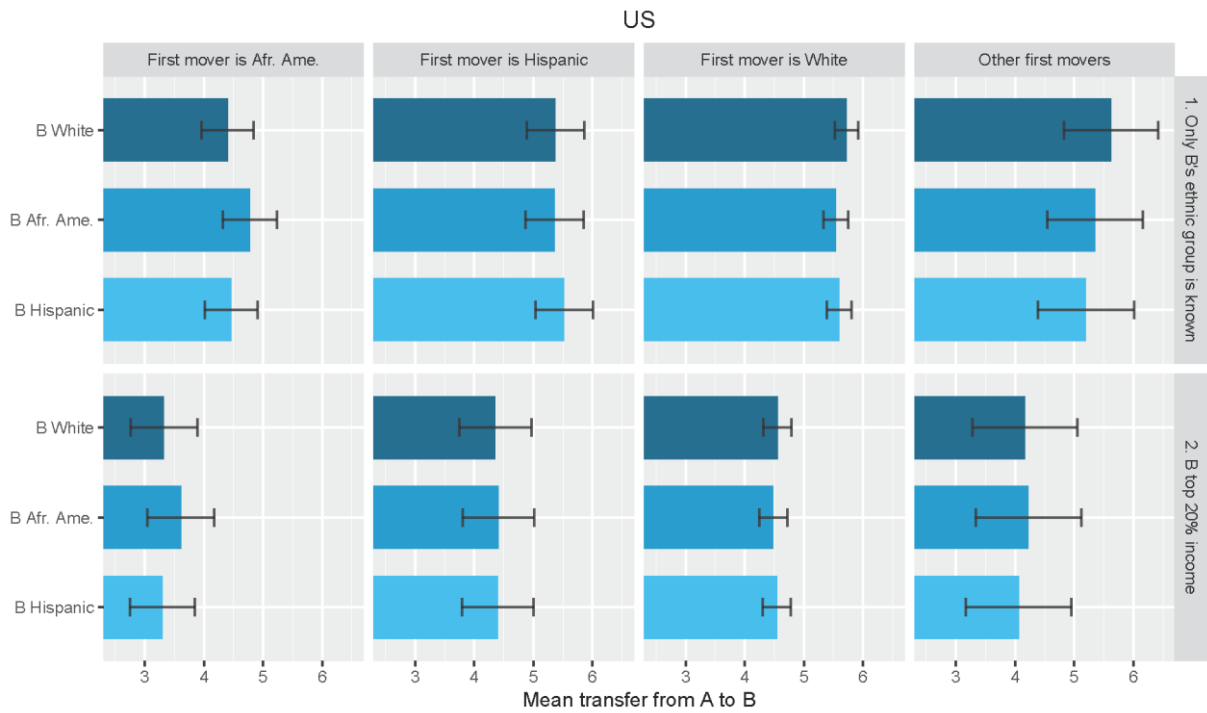
Annex A. Figures

Figure A.1. Transfer decisions from first mover to second mover in the United States and Germany by second mover ethnic group
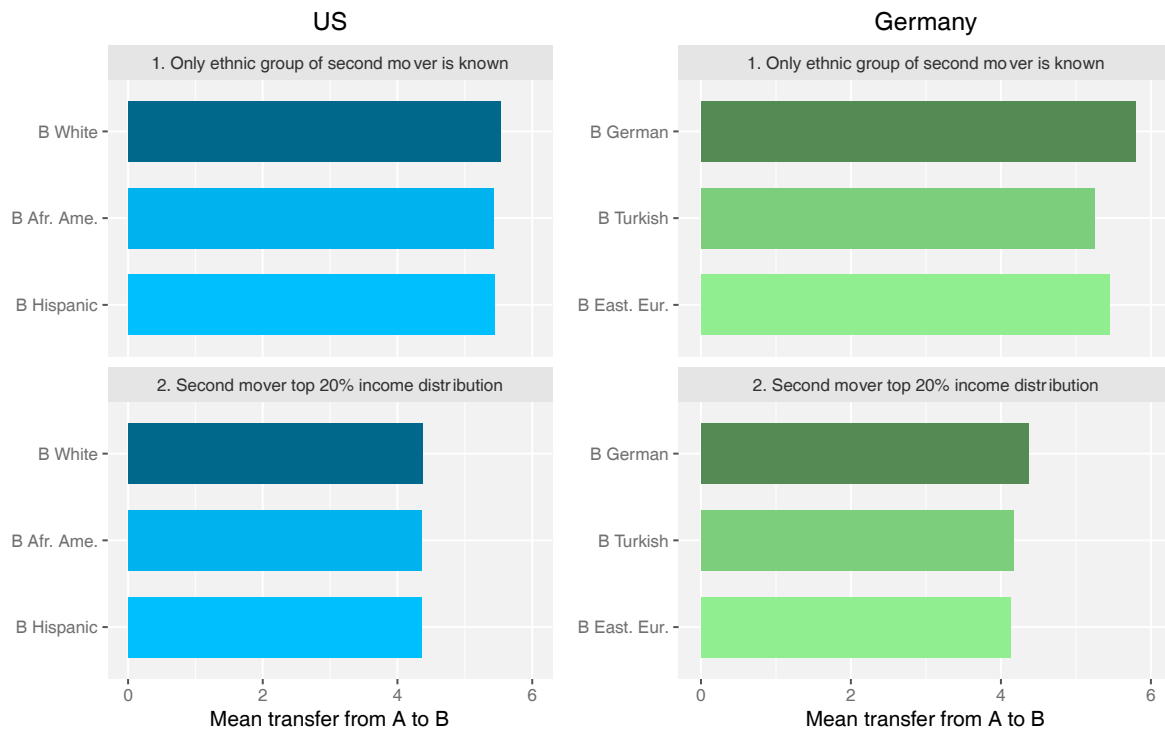
Notes: The bars display the average level of transfers to each type of second mover pooling over the whole US sample for the left panel and the whole German sample for the right panel. The upper part displays Ethnic block transfers (only ethnicity is known) and the lower part shows Ethnic plus Income block transfers (the second mover is additionally in the top 20% of the national income distribution). 95% confidence intervals are reported.

Figure A.2. Transfer decisions from first mover to second mover in the United States by first mover ethnicity

Notes: The bars display the average level of transfers to each type of second mover by first mover ethnic group. The upper part displays Ethnic block transfers (only ethnicity is known) and the lower part shows Ethnic plus Income block transfers (the second mover is additionally in the top 20% of the national income distribution). 95% confidence intervals are reported. The computations are made on the whole US sample. Other first movers correspond to Asian Americans, American Indian or Alaska Native, people with more than one ethnic group and other ethnic groups.

Figure A.3. Transfer decisions from first mover to second mover in Germany by first mover ethnicity
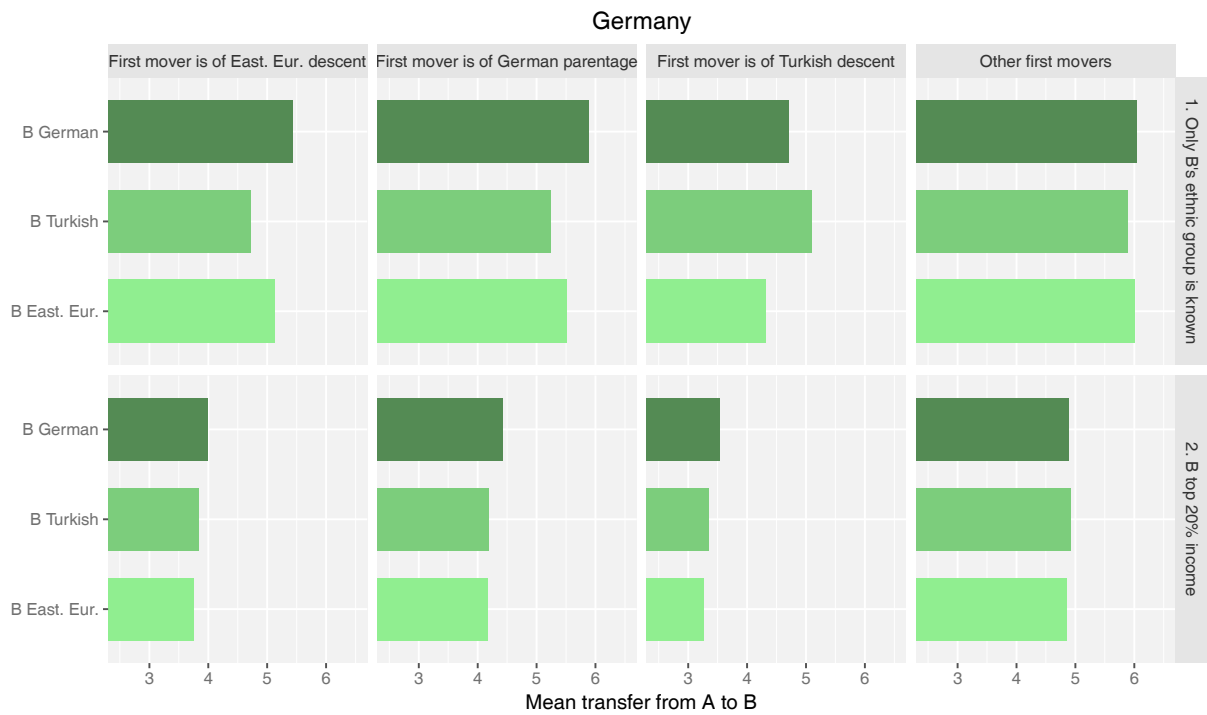
Notes: The bars display the average level of transfers to each type of second mover by first mover ethnic group. The upper part displays Ethnic block transfers (only ethnicity is known) and the lower part shows Ethnic plus Income block transfers (the second mover is additionally in the top 20% of the national income distribution).95% confidence intervals are reported. The computations are made on the whole German sample.

Annex B. Tables

Table B.1. Summary statistics – United States

Variable	Obs	Mean	Std. Dev.	Population mean
Socio-demographic characteristics				
A white	1090	.715	.452	.604
A African American	1090	.112	.315	.134
A Hispanic	1090	.113	.317	.161
A Asian American	1090	.037	.188	.059
A other non-white race	1090	.024	.153	.042
Female	1090	.512	.5	.508
Age: 0-14	1090	0	0	.185
Age: 15-24	1090	.1	.3	.129
Age: 25-54	1090	.569	.495	.389
Age: 55-64	1090	.326	.469	.129
Age: 65+	1090	.006	.074	.166
A poor	1090	.498	.5	.4
A medium income cat.	1090	.195	.397	.2
A rich	1090	.306	.461	.4
High school or less	1090	.2	.4	.4
Some college	1090	.381	.486	.28
Tertiary diploma	1090	.419	.494	.32
Employed	1090	.55	.498	.57
Self-employed	1090	.076	.265	.038
Unemployed	1090	.12	.325	.024
Out of the labour force	1090	.253	.435	.37
Right wing	968	.449	.498	
Trust games behaviour				
Transfer same amount in Ethnic block	1090	.806	.395	
Transfer same amount in Ethnic plus Income block	1090	.843	.364	
Always transfer the same amount within each block	1090	.763	.425	

Notes: All variables are binary. The population mean column refers to the real socio-demographic characteristics of the US. Ethnic composition and education data comes from the 2018 US Census: https://www.census.gov/quickfacts/fact/table/US/PST045218 and https://www.census.gov/data/tables/2018/demo/education-attainment/cps-detailed-tables.html. Age structure data comes from the CIA World Fact book https://www.cia.gov/library/publications/the-world-factbook/. Employment data comes from the US Bureau of Labor Statistics; https://www.bls.gov/cps/cpsaat01.htm. All our subjects are at least 17 years old. A poor means that the subject's household income falls within the bottom two income quintiles of the distribution of her country, third income quintile for A medium income cat. and the top two income quintiles for A rich. Household income comes from all salaries, wages, profit from self-employment, interest, rent, pension, social insurance payments and other benefits. Income is calculated before tax but after transfers. Right-wing results from the dichotomization of answers to a left-right political attitude question on a 0 (far-left) to 10 (far-right) scale. A subject is considered right-wing if her answer at the political attitude question is greater than 5. Transfer same amount in Ethnic block (Ethnic plus Income block) is equal to 1 if the subject chooses to transfer the same amount to all Ethnic block (Ethnic plus Income block) second movers. Always transfer the same amount within each block is equal to 1 if the two latter variables are both equal to 1 and 0 otherwise (the level of transfers can differ between blocks as long as second movers are treated the same way within each block).

Table B.2. Summary statistics – Germany

Variable	Obs	Mean	Std. Dev.	Population mean
Socio-demographic characteristics				
A German	1108	.801	.399	.745
A East. European	1108	.065	.247	.065
A Turkish	1108	.06	.238	.034
A other non-native	1108	.073	.26	.156
Female	1108	.503	.5	.507
Age: 0-14	1108	0	0	.129
Age: 15-24	1108	.106	.307	.098
Age: 25-54	1108	.665	.472	.389
Age: 55-64	1108	.213	.41	.157
Age: 65+	1108	.016	.126	.23
A poor	1108	.361	.481	0.4
A medium income cat.	1108	.231	.422	0.2
A rich	1108	.408	.492	0.4
High school or less	1108	.293	.455	.26
Some college	1108	.369	.483	.56
Tertiary diploma	1108	.338	.473	.18
Employed	1108	.623	.485	.65
Self-employed	1108	.07	.256	.068
Unemployed	1108	.046	.21	.024
Out of the labour force	1108	.261	.439	0.26
Right wing	1017	.296	.457	
Trust games behaviour				
Transfer same amount in Ethnic block	1108	.606	.489	
Transfer same amount in Ethnic plus Income block	1108	.75	.433	
Always transfer the same amount within each block	1108	.557	.497	

Notes: All variables are binary. The population mean column refers to the real socio-demographic characteristics of Germany. Ethnic composition, education and employment data comes from the Statistisches Bundesamt: https://www.destatis.de/. Age structure data comes from the CIA World Fact book https://www.cia.gov/library/publications/the-world-factbook/. All our subjects are at least 17 years old. A poor means that the subject's household income falls within the bottom two income quintiles in her country, third income quintile for A medium income cat. and the top two income quintiles for A rich. Household income was elicited using the following question: In the last 12 months, what was the total income of your household before taxes have been deducted? (Income can come salaries and wages, profit from self-employment, interest, rent, pension, social insurance payments and other benefits, among others). Right-wing results from the dichotomization of answers to a left-right political attitude question on a 0 (far-left) to 10 (far-right) scale. A subject is considered right-wing if her answer at the political attitude question is greater than 5. Transfer same amount in Ethnic block (Ethnic plus Income block) is equal to 1 if the subject chooses to transfer the same amount to all Ethnic block (Ethnic plus Income block) second movers. Always transfer the same amount within each block is equal to 1 if the two latter variables are both equal to 1 and 0 otherwise (the level of transfers can differ between blocks as long as second movers are treated the same way within each block).

Table B.3. In-group bias at the country level in the Ethnic block

	(1)	(2)	(3)
	Dep. Var.: transfers from 1st mover to 2nd mover in the trust game		
A and B belong to the same ethnic group	0.290***	0.180***	0.176***
	(0.0403)	(0.0533)	(0.0532)
Germany	-0.0328	-0.0641	
	(0.123)	(0.127)	
Germany * A and B belong to the same ethnic group	0.219***	0.222***	
	(0.0804)	(0.0801)	
Constant	5.319***	5.336***	5.838***
	(0.0628)	(0.0884)	(0.279)
Controls	No	No	Yes
Observations	6594	6594	6594
R2	0.003	0.004	0.017

Notes: Columns 1 to 3 report the results of pooled OLS regressions on the US and German samples jointly using all the three decisions made by each first mover in the ethnic bloc Trust games (only ethnicity of second mover is known). The dependent variable is the level of transfer from the first mover to the second mover. The explanatory variables are binary variables for whether the first and the second mover have different ethnicity, whether the first mover lives in Germany and an interaction of these two variables. We additionally control for a variable indicating whether the observation corresponds to the first second mover encountered (first transfer made in the Ethnic bloc to capture any first round effects. Subject-level control variables (in column 3) include gender, 4 age, 2 income level, 2 education level and 3 employment category binary variables.

Table B.4. Individual determinants of in-group ethnic bias

	United States		Germany	
	Ethnic block	Ethnic plus Income block	Ethnic block	Ethnic plus Income block
	(1)	(2)	(3)	(4)
	Dependent variable: in-group transfer - average out-group transfer			
A White	-0.192	-0.242		
	(0.152)	(0.155)		
A Hispanic	-0.205	-0.281		
	(0.163)	(0.183)		
A German			0.430*	0.387***
			(0.252)	(0.118)
A Turkish			0.554	0.101
			(0.370)	(0.206)
Female	-0.163**	-0.0782	-0.0630	-0.0734
	(0.0814)	(0.0740)	(0.107)	(0.0790)
Age: 18-24	-0.109	0.0402	0.0372	-0.0165
	(0.128)	(0.0663)	(0.202)	(0.137)
Age: 25-34	0.0455	0.114	-0.00914	0.000979
	(0.132)	(0.108)	(0.174)	(0.132)
Age: 35-44	0.0697	-0.000	-0.404***	-0.118
	(0.112)	(0.112)	(0.148)	(0.111)
Age: 45-54	0.0387	0.0171	-0.125	0.0738
	(0.115)	(0.0985)	(0.162)	(0.124)
A poor	-0.0971	0.0175	-0.0377	0.0516
	(0.105)	(0.0920)	(0.132)	(0.107)
A medium income cat.	-0.163	-0.0793	-0.107	0.064
	(0.135)	(0.112)	(0.136)	(0.112)
High school or less	0.218*	0.0120	-0.0222	-0.0152
	(0.121)	(0.109)	(0.152)	(0.122)
Some college	0.100	0.0435	-0.108	-0.0179
	(0.0959)	(0.0869)	(0.133)	(0.0965)
Employed	0.156	0.0596	0.374	0.161
	(0.118)	(0.106)	(0.241)	(0.237)
Self-employed	0.105	0.0276	-0.0516	0.0118
	(0.176)	(0.190)	(0.317)	(0.266)
Out of the labour force	0.200*	0.0946	0.135	0.18
	(0.118)	(0.104)	(0.259)	(0.244)
Constant	0.266	0.227	0.0378	-0.275
	(0.192)	(0.176)	(0.440)	(0.287)
Observations	1024	1024	1027	1027
R2	0.013	0.009	0.021	0.014

Notes: Standard errors clustered at the individual level in parentheses ∗ p < 0.10, ∗∗ p < 0.05, ∗∗∗ p < 0.01.
The table reports the results of OLS regressions on the US sample (only White, African American and Hispanic first movers) in columns 1 and 2 and on the German sample (only German parentage, Eastern European descent and Turkish descent first movers) in columns 3 and 4. Odd-numbered columns use the data of the Ethnic block, when only the ethnic group of the second mover is known and even-numbered columns use the data of the Ethnic plus Income block when income information is additionally disclosed. The dependent variable is the difference in the in-group transfer and the average out-group transfer. For instance, for African Americans this corresponds to the difference between transfers to other African Americans and the average of the transfers to White and Hispanic second movers. The explanatory variables are binary variables for the ethnic group of the first mover. Subject-level control variables include gender, 4 age, 2 income level, 2 education level and 3 employment category binary variables. See the notes of Table B.1 and Table B.2 for more information about these variables.

Annex C. Behaviour consistency

We describe here the difference in attitudes between people sticking to the same transfer decisions and those that deviate across ethnic groups using Trustlab's survey module. Is it true that subjects always transferring the same amount also report being less racially biased in more traditional survey questions? It seems to be the case. In unreported results one looks at the difference in means between the two types of behaviour to several questions on trust and opinion toward immigrants in the US and Germany respectively. In both countries, subjects changing transfers and those always transferring the same amount (within each block) do not differ much in their answers to trust questions that are not racially oriented. They both report similar levels of generalized trust, trust in their family, neighbourhood and people they know personally. However, switchers trust less people of another religion, of another nationality or who immigrated. This result is more pronounced in Germany than in the US.

Annex D. Experimental instructions

Before turning to the detailed instructions, we first summarize the sequence of experimental games. They are organized in 5 tasks and several decisions have to be made within a task. The sequence of tasks is the same for everyone. One task and one decision within the selected task are randomly chosen to become payoff relevant. The 5 tasks are the following:

1. A (generalized) trust game as first mover and a (generalized) trust game as second mover;

2. An unconditional public good game and a conditional public good game;

3. A dictator game;

The ethnic discrimination module (Ethnic block, Ethnic plus Income block and expectations);

A risk aversion module.

For each game where participants have to make decisions within a pair or a group, they are matched randomly with other participants of the survey, living in the same country. In each game, new participants are randomly drawn to be matched with the subject. Note that participants obtain no feedback regarding others' decisions or their earnings until after all games have been played and Trustlab's survey module has been completed. Subjects received their money via Paypal up to 48 hours after the end of the survey. The currency was the dollar in the US and the euro in Germany. We report everything in dollars here for simplicity.

Screen 1

Welcome! Our research team[27] invites you to participate in a quick online study on decision-making. The aim of this study is to learn more about how we as human beings behave - how do we make decisions? How do we interact with one another when faced with different choices? How do we feel about the people and institutions around us? To find this out, you will be participating in different

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[27] Including researchers from Sciences Po Paris, Brown University and Kiel University.

tasks: In the first part, you will participate in five simple tasks, in anonymous interaction with one or more other people. In the second part, you are going to sort different sets of words. In the third part, we ask you to answer a few questions about yourself and your opinions. The whole study should take you about 30 minutes. Note that you should complete this study in one sitting, without any extensive period of inactivity. For best results, minimize distractions and close other programs. You can participate in the study via your laptop computer or tablet (we support recent iPads). If you are having trouble accessing the platform, we advise you to switch to Google Chrome. If problems persist, please contact GMI, specifying your device model and browser.

By participating in the study's tasks, you can earn an amount of up to [currency amount: United States: "40 dollars"]. This amount will depend on the decisions you make together with the other participants during the study's tasks. At the end of the study, one of the several tasks you have completed will be randomly selected. The amount of money you will receive will correspond to your earnings in this selected task. Your decisions will also affect the earnings that other people will receive! You will receive your money at the end of the study via Paypal. Your payment will be processed after your decisions and those of other participants are collected. Because other participants may not be online at the same time as you, the calculation of your earnings may take up to 48 hours.

The data gathered in this study is subject to national privacy protocols. We will use it for research purposes only.

Screen 2 – SECTION 1: TASKS

We will start by giving you five tasks. Note that each task may include several different decisions. This is the part of the study that will allow you to earn additional money. Each of these decisions may determine your final payments.

At the beginning of each task, you may be grouped with other study participants. All participants in this study are from [country name (United States: "the United States"] like you. In each task, the other participants you are grouped with will be different: the same person will never be in your group more than once. How will your earnings be calculated? Your earnings in each task will depend on your and the other participants' decisions. At the end of the study, one of the five tasks you have completed will be randomly selected. The amount of money you will receive will correspond to your earnings in one of the decisions in this selected task. In short, each task may determine your final payoff!

Screen 3 – TASK 1: INTRODUCTION

In the first task, two people participate: Participant A and Participant B. As mentioned before, this other participant also lives in [country name (United States: "the United States"]. These are the rules of the task:

- At the beginning of the task, both participants receive [currency amount, United States: "10 dollars"].

- Participant A has the option to transfer none, part or all of his or her [currency amount, United States: "10 dollars"] to Participant B.

- Whatever amount Participant A sends is multiplied by 3.

- Participant B, after receiving the transfer of Participant A, has to decide how much money, if any, he or she wants to send back to Participant A.

You are asked to make decisions in both role A and B. Which role you will be assigned to for payment will be determined randomly. In either case, your interaction will be with a person who gets randomly assigned to the other role.

Screen 4 – TASK 1: TEST SIMULATION

This is not the real task yet, but a simulation to help you understand the rules better. You can use the test screen below to experiment with the different choices of the two participants. Between each test, click the "reset to zero" button below to reset the calculator.

Screen 5 – TASK 1: REAL TASK (PARTICIPANT A)

Now the real task 1 starts. Once you have made your decision and clicked the "Next" button, you cannot return to this screen.

Suppose you are selected to be in the role of Participant A. You have [currency amount, United States: "10 dollars"] in your possession. How much (if any) do you want to send to Participant B? Please enter a number from 0 to 10:

Screen 6 – TASK 1: REAL TASK (PARTICIPANT B)

Now, suppose you are selected to be in the role of Participant B. On this screen you will make the decisions that will count if you are selected for that role. Once you have made your decision and clicked the "Next" button, you cannot return to this screen. As always, your initial endowment is [currency amount, United States: "10 dollars"]. Remember that Participant A also starts with an endowment of [currency amount, United States: "10 dollars"]. If Participant A sends you any of the amounts listed in the table below, how much money (if any) do you want to send back to Participant A? All of your choices below can impact how much money you and the other participant will receive at the end of the study.

- If Participant A sends you [currency amount, United States: "0 dollars"] (your total endowment is now [currency amount, United States: "10 dollars"]. How much will you send back to Participant A:

- If Participant A sends you [currency amount, United States: "1 dollar"] (your total endowment is now [currency amount, United States: "13 dollars"]. How much will you send back to Participant A:

- If Participant A sends you [currency amount, United States: "2 dollars"] (your total endowment is now [currency amount, United States: "16 dollars"]. How much will you send back to Participant A:

- If Participant A sends you [currency amount, United States: "3 dollars"] (your total endowment is now [currency amount, United States: "19 dollars"]. How much will you send back to Participant A:

- If Participant A sends you [currency amount, United States: "4 dollars"] (your total endowment is now [currency amount, United States: "22 dollars"]. How much will you send back to Participant A:

- If Participant A sends you [currency amount, United States: "5 dollars"] (your total endowment is now [currency amount, United States: "25 dollars"]. How much will you send back to Participant A:

- If Participant A sends you [currency amount, United States: "6 dollars"] (your total endowment is now [currency amount, United States: "28 dollars"]. How much will you send back to Participant A:

- If Participant A sends you [currency amount, United States: "7 dollars"] (your total endowment is now [currency amount, United States: "31 dollars"]. How much will you send back to Participant A:

- If Participant A sends you [currency amount, United States: "8 dollars"] (your total endowment is now [currency amount, United States: "34 dollars"]. How much will you send back to Participant A:

- If Participant A sends you [currency amount, United States: "9 dollars"] (your total endowment is now [currency amount, United States: "37 dollars"]. How much will you send back to Participant A:

- If Participant A sends you [currency amount, United States: "10 dollars"] (your total endowment is now [currency amount, United States: "40 dollars"]. How much will you send back to Participant A:

Screen 7 – TASK 1: REAL TASK (HYPOTHETICAL SCENARIO)

You have just had made decisions as Participant A and Participant B. The following question is about your expectations of other people's decisions. You are not actually deciding as Participant A or Participant B, and this decision will not affect your earnings. We want you to imagine the following scenario: Imagine you sent [currency amount, United States: "5 dollars"], so Participant B receives [currency amount, United States: "15 dollars"], making his or her total budget [currency amount, United States: "25 dollars"]. Participant B has no information about your identity. What amount would you expect Participant B to return to you? Please enter a number from 0 to 25.

Screen 8 – THANK YOU

Thank you very much for entering your choice. We have recorded your decision. Now, please proceed to the second task.

Screen 9 – TASK TWO: INTRODUCTION

In the second task, groups of 4 participants (yourself and 3 other people) are formed. Remember, the participants in this group are different from the person you interacted with in the previous task. However, they all live in [country name (United States: "the United States"]. These are the rules:

- At the beginning, each group member has [currency amount, United States: "10 dollars"].

- Every group member has to choose how much of these [currency amount, United States: "10 dollars"] he or she wants to keep and how much he or she wants to transfer into a joint project.

- The total amount transferred to the joint project is multiplied by 1.6.

- At the end, the money in the joint project will be re-divided and split equally between all 4 group members (including yourself).

Screen 10 – TASK TWO: TEST SIMULATION

This is not the real task yet, but a simulation to help you understand the rules better. You can use the test screen below to experiment with the different choices of the four participants. Whenever you are ready to proceed to the real task, click next.

Screen 11 – TASK TWO: REAL TASK

Now the real task starts. Once you have made your decision and clicked the "Next" button, you cannot return to this screen. You have [currency amount, United States: "10 dollars"] in your possession. You may choose to keep this money, or choose to invest some (or all) of it in the joint project. How much (if any) do you want to transfer to the project?

Screen 12 – TASK TWO: REAL TASK CONTINUED

Now imagine that this time, you find out how much money the other three members of your group are investing in the joint project. All of your choices below can impact how much money you will receive at the end of the study.

Please indicate how much (if any) you would like to transfer to the joint project:

- if on average, each of the other group members contributes [currency amount, United States: "0 dollars"]:

- if on average, each of the other group members contributes [currency amount, United States: "1 dollar"]:

- if on average, each of the other group members contributes [currency amount, United States: "2 dollars"]:

- if on average, each of the other group members contributes [currency amount, United States: "3 dollars"]:

- if on average, each of the other group members contributes [currency amount, United States: "4 dollars"]:

- if on average, each of the other group members contributes [currency amount, United States: "5 dollars"]:

- if on average, each of the other group members contributes [currency amount, United States: "6 dollars"]:

- if on average, each of the other group members contributes [currency amount, United States: "7 dollars"]:

- if on average, each of the other group members contributes [currency amount, United States: "8 dollars"]:

- if on average, each of the other group members contributes [currency amount, United States: "9 dollars"]:

- if on average, each of the other group members contributes [currency amount, United States: "10 dollars"]:

Screen 13 – THANK YOU

Thank you very much for entering your choice. We have recorded your decision. Again, your payoff will depend on the actions of the other participants. Now, please proceed to the third task.

Screen 14 – TASK THREE: INTRODUCTION

The third task involves two participants - Participant A and Participant B. Remember, the other participant is different from the ones you interacted with in the previous two tasks. However, he or she also lives in [country name (United States: "the United States"]. These are the rules:

- At the beginning, Participant A receives [currency amount, United States: "10 dollars"].

- Participant B does not receive any money - he or she has [currency amount, United States: "0 dollars"].

- Participant A must now decide if he or she wants to transfer any of his or her [currency amount, United States: "10 dollars"] to Participant B.

This transfer is not multiplied by any number and Participant B cannot transfer any amount back to Participant A. Your role (Participant A or Participant B) will be determined later. We ask you to make a choice as A in case this is your role. B has no decision to make. Remember that someone will be assigned to role B and that person's payment will be affected by your decision as A. Because this task is simple, there will be no simulator to test out different choices.

Screen 15 – TASK THREE: REAL DECISION

This is the real third task. Once you have made your decision and clicked the "Next" button, you cannot return to this screen. Suppose that you are selected to be in the role of Participant A. You have [currency amount, United States: "10 dollars"] in your possession. How much (if any) do you want to transfer to Participant B?

Screen 16 – THANK YOU

Thank you very much for entering your choice. We have recorded your decision. Now, please proceed to the fourth task, which will be similar to Task 1.

Screen 17 – TASK FOUR: INTRODUCTION

Task 4 follows the same rules as Task 1 in which you participated earlier. In Task 4 you will be assigned to the role of Participant A. In this task, you will again be asked to make choices about how much money you want to transfer to a Participant B, but now you will have more information about the background of the Participant B that you are interacting with. Participant B will have no information about your own identity, except that you also live in [country]. If this Task is selected as the one determining your payments, you will be paid for one of the choices you make during this task, which will be randomly selected. In short, as always, every decision you make can determine your final payoff!

Screen 18 – TASK FOUR: RULES

Remember, in this task, two people participate: Participant A and Participant B. As mentioned before, the other participants you are interacting with all live in [country name (United States: "the United States"]. These are the rules of the task:

- At the beginning of the task, both participants receive [currency amount, United States: "10 dollars"].

- Participant A has the option to transfer none, part or all of his or her [currency amount, United States: "10 dollars"] to Participant B.

- Whatever amount Participant A sends is multiplied by 3.

- Participant B, after receiving the transfer of Participant A, has to decide how much, if any, money he or she want to send back to Participant A.

You are asked to make decisions as Participant A only. Your payoff will be based on the decision of one Participant B who you will be randomly matched with.

Screen 19 – TASK FOUR: REAL TASK (INTRODUCTION)

Now the real task 4 starts. Once you have made your decision and clicked the "Next" button, you cannot return to this screen. [The following three questions follow a randomised order]

Screen 20 – TASK FOUR: REAL TASK 1

Suppose that Participant B is [US: non-Hispanic White] [Germany: a person who was born in Germany and whose parents were also born in Germany]. You have [currency amount, United States: "10 dollars"] in your possession. How much (if any) do you want to transfer to this Participant B? Please enter an amount from 0 to 10.

Screen 21 – TASK FOUR: REAL TASK 2

Suppose that Participant B is [US: African American] [Germany: a person who was born in Eastern Europe or whose parents were born in Eastern Europe]. You have [currency amount, United States: "10 dollars"] in your possession. How much (if any) do you want to transfer to this Participant B? Please enter an amount from 0 to 10.

Screen 22 – TASK FOUR: REAL TASK 3

Suppose that Participant B is [US: Hispanic] [Germany: a person who was born in Turkey or whose parents were born in Turkey]. You have [currency amount, United States: "10 dollars"] in your possession. How much (if any) do you want to transfer to this Participant B? Please enter an amount from 0 to 10.

Screen 23 – TASK FOUR: REAL TASK CONTINUED

There will be three more interactions, with yet again more information about the Participant B that you are interacting with. The rules remain the same. Your payoff depends on how much you decide to transfer to Participant B and how much this participant will decide to transfer back to you. Again, each of these choices may determine your final payoff. [The following three questions follow a randomized order]

Screen 24 – TASK FOUR: REAL TASK 4

Suppose that Participant B is [US: non-Hispanic White and the income he or she receives places him or her among the 20% richest people in the US] [Germany: a person who was born in Germany and whose parents were also born in Germany. Moreover, the income he or she receives places him or her among the 20% richest people in Germany]. You have [currency amount, United States: "10 dollars"] in your possession. How much (if any) do you want to transfer to this Participant B? Please enter an amount from 0 to 10.

Screen 25 – TASK FOUR: REAL TASK 5

Suppose that Participant B is [US: African American and the income he or she receives places him or her among the 20% richest people in the US] [Germany: a person who was born in Eastern Europe or whose parents were born in Eastern Europe. Moreover, the income he or she receives places him or her among the 20% richest people in Germany]. You have [currency amount, United States: "10 dollars"] in your possession. How much (if any) do you want to transfer to this Participant B? Please enter an amount from 0 to 10.

Screen 26 – TASK FOUR: REAL TASK 6

Suppose that Participant B is [US: Hispanic and the income he or she receives places him or her among the 20% richest people in the US] [Germany: a person who was born in Turkey or whose parents were born in Turkey. Moreover, the income he or she receives places him or her among the 20% richest people in Germany]. You have [currency amount, United States: "10 dollars"] in your possession. How much (if any) do you want to transfer to this Participant B? Please enter an amount from 0 to 10.

Screen 27 – TASK FOUR: EXPECTATIONS

As before, we will ask you about your expectations of other people's decisions. Remember, all participants live in [country] like you. You are not making a decision as Participant A or Participant B, and what you enter will not affect your earnings. In the following screens, we want you to imagine different scenarios: [The following three questions follow a randomized order]

Screen 28 – TASK FOUR: EXPECTATIONS 1

Suppose that Participant B is [US: non-Hispanic White] [Germany: a person who was born in Germany and whose parents were also born in Germany]. You have no information regarding B's income, in this case. Imagine you sent [currency amount, United States: "5 dollars"], so Participant B receives [currency amount, United States: "15 dollars"], making his or her total budget [currency amount, United States: "25 dollars"]. Participant B has no information about your identity. What amount would you expect Participant B to return to you? Please enter a number from 0 to 25.

Screen 29 – TASK FOUR: EXPECTATIONS 2

Suppose that Participant B is [US: African American] [Germany: a person who was born in Eastern Europe or whose parents were born in Eastern Europe]. You have no information regarding B's income, in this case. Imagine you sent [currency amount, United States: "5 dollars"], so Participant B receives [currency amount, United States: "15 dollars"], making his or her total budget [currency amount, United States: "25 dollars"]. Participant B has no information about your identity. What amount would you expect Participant B to return to you? Please enter a number from 0 to 25.

Screen 30 – TASK FOUR: EXPECTATIONS 3

Suppose that Participant B is Suppose that Participant B is [US: Hispanic] [Germany: a person who was born in Turkey or whose parents were born in Turkey]. You have no information regarding B's income, in this case. Imagine you sent [currency amount, United States: "5 dollars"], so Participant B receives [currency amount, United States: "15 dollars"], making his or her total budget [currency amount, United States: "25 dollars"]. Participant B has no information about your identity. What amount would you expect Participant B to return to you? Please enter a number from 0 to 25.

Screen 31 - THANK YOU

Thank you very much for entering your choices. We have recorded your decision. Again, your payoff will depend on the actions of the other participants. Now, you will proceed to the last task of this section of the study.

Screen 32 - TASK FIVE: INTRODUCTION

In this task you have the option to choose from six different gambles. In each gamble, you can win one out of two amounts. You must select one and only one of these gambles. Each gamble has two possible outcomes: outcome A and outcome B. Only one of these outcomes will occur. The gamble works as a random draw, comparable to a coin toss. Like in a coin toss, each possible outcome has a 50% chance of occurring.

Your compensation for this part of the study will be determined by:

1. Which of the six gambles you select. This is your choice.

2. Which of the two possible outcomes occur. This is determined by chance. The random draw is conducted by our computer. Either outcome has the same probability of occurring. The gamble selection table below shows your possible options. You will be asked to choose one of these gambles.

Examples:

- For instance, if you choose Gamble 2, you will earn 7 dollars if outcome A occurs, or 10 dollars if outcome B occurs.

- If you choose Gamble 5, you will earn 4 dollars if outcome A occurs, or 16 dollars if outcome B occurs.

- If you choose Gamble 1, you will earn 8 dollars, regardless of which outcome occurs.

Gamble	Outcome	Payoff	Probabilities	Choice
1	A	8	50%	
	B	8	50%	
2	A	7	50%	
	B	10	50%	
3	A	6	50%	
	B	12	50%	
4	A	5	50%	
	B	14	50%	
5	A	4	50%	
	B	16	50%	
6	A	1	50%	
	B	19	50%	

Screen 33 – TASK FIVE: REAL TASK

Now the real task 5 starts. Once you have made your decision and clicked the "Next" button, you cannot return to this screen. These are the six gambles from which you can choose. If this task is chosen for payment, then your earnings will depend on the gamble you choose and the outcome of the gamble. Please select the gamble of your choice.

Gamble	Outcome	Payoff	Probabilities	Choice
1	A	8	50%	
	B	8	50%	
2	A	7	50%	
	B	10	50%	
3	A	6	50%	
	B	12	50%	
4	A	5	50%	
	B	14	50%	
5	A	4	50%	
	B	16	50%	
6	A	1	50%	
	B	19	50%	

Screen 34 – TASK FIVE: THANK YOU

Thank you once again! You have completed all tasks in this section and we have recorded all your choices. Let's go to the second section of the study, where you will be asked to sort a number of words.