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Identity breeds inequality: Evidence from a laboratory experiment on redistribution

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ABSTRACT

Politics is increasingly driven by identity cleavages, which also affect the discussion about inequality and redistribution. Typically, redistribution is meant to reduce inequality, implying that redistribution neither makes the rich richer nor the former poor the new rich. However, if identity affects redistribution, these limits might no longer be binding, and redistribution could further increase existing inequalities (making the rich richer) or reverse the income ordering to favor the once-poor (which can even be inequality increasing if redistribution is strong). In a laboratory experiment, we investigate redistribution via a novel smooth one-dimensional distribution mechanism that also allows for an increase or reversal of inequality. Decision-makers receive information about the recipients' political orientation, nationality, or seat number during the experiment, and we vary the structure and source of income inequality (income is either earned, random, or unfair). We find most choices of the decision-makers involve redistribution, with only 8 % of choices sticking with the status quo. While most redistribution choices reduce inequality, a larger share—(18 %)—increase inequality by making the rich richer, 13 % of choices reduce overall inequality but make the poor the new rich, and 9 % increase inequality by making the poor very rich. Thus, 40 % of decisions are redistributions that are typically unobserved in common redistribution designs. Ingroup favoritism is a strong motive for redistribution in general, and it is the most important motive for redistribution to increase or reverse inequality. Indeed, 85 % of the inequality-increasing or reversing decisions favor the ingroup. Complementary eye-tracking data show that decision-makers' attention to information about the recipients' groups and to poor outliers are related to higher levels of redistribution.

1. Introduction

Redistribution of income or wealth is a heavily debated topic. The question of how income should be redistributed is a major concern in all societies, and it has gained even more topicality since the publication of Piketty (2014). Traditionally, people's redistribution preferences have been explained by selfish incentives and fairness views based on merit and equality (Esarey et al., 2011; Klor and Shayo, 2010; Durante et al., 2014; Tyran and Sausgruber, 2006). More recently, a new dimension has come into play— ingroup preference (Chen and Li, 2009; Klor and Shayo, 2010; Tajfel et al., 1979; Shayo, 2009, 2020; Charness and Chen, 2020). For example, Alesina et al. (2018a) find that native voters may oppose redistribution if redistribution mainly helps immigrants, even if they are poor themselves. Even just thinking about immigration made respondents favor lower levels of redistribution. This new dimension might change how we study redistribution: when ingroup preferences shape redistribution, then people could also have a preference for using redistribution to increase inequality in favor of the rich or reverse inequality and make the

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previously poor the new rich, or even increase inequality by making the previously poor very rich.[1] In this paper, we extend the redistribution mechanism to allow for these forms of redistribution.[2]

In a laboratory experiment conducted in Germany and the Czech Republic, we investigate preferences for redistribution in heterogeneous groups of five participants. In the experiment, third parties can decide on the extent of redistribution for these groups. The design has three dimensions, which we investigate in a within-subject design using a strategy method variant.[3] First, the decision-maker were always informed about one facet of the recipient's "group identity," which could be nationality (native or non-native), political orientation (left or right), or a minimal group paradigm, that is, seat number in the lab (odd or even). Given the increasing polarization in society (Dimant, 2023; Finkel et al., 2020), we consider political orientation as a particularly salient ingroup. Second, we randomized the source of income inequality which determined the initial experimental income. The initial income was either determined by the performance in a real effort task, was randomly assigned, or was unfairly allocated, that is, the income was positively correlated with participants' actual dollar value of their phone.[4] Previous research has shown that when assessing fairness, people care whether wealth is earned or acquired by chance (Durante et al., 2014; Cappelen et al., 2013a; Gächter and Riedl, 2006; Almås et al., 2020), and we want to investigate how this dimension affects people's redistribution decisions and how it compares and interacts with ingroup preferences. Third, we vary the initial income distribution: some distributions put the ingroup members at the top of the income distribution and other distributions put outgroup members at the top. Here, we also varied the form of the distribution, as some initial distributions have equal distances between income ranks, while others have either a poor or rich outlier. In addition to these three variations, we employed eye-tracking technology to help identify decision-makers' underlying motives for their decisions. Eye-tracking technology has been used successfully to identify the relative importance of different pieces of information, giving additional insights into the decision-making process and its underlying motives, e.g., Jiang et al. (2016); Polonio et al. (2015); Rahal et al. (2020); Fischbacher et al. (2022).

Our results show that most decision-makers promote redistribution and are strongly motivated by intergroup discrimination. Even though most redistribution choices reduce inequality, a large share—27 %— increase inequality (19 % of choices make the rich richer, 8 % make the poor very rich). Meanwhile, an additional 13 % of choices reduce overall inequality, but flip the roles of rich and poor. Of the choices which increase or reverse inequality, which are typically unobserved in common redistribution experiment designs, 85 % favor the ingroup. Second, our results confirm previous findings that redistribution toward the poor is lower if the ex-ante distribution results from individual effort. However, we find little differences between situations in which the ex-ante distribution results from pure luck and situations in which the ex-ante distribution results from an unfair procedure. Third, compassion for the poor is a more important motive for redistribution than envy of the rich. Processing data complements the behavioral results showing that the decision-maker's attention to information about the recipients' group is correlated with redistribution, but it also shows that attention to poor outliers is correlated with redistribution, while attention to rich outliers is not. In our additional analyses, we identify different types of decision-makers concerning the main motive of redistribution and find that our two sample countries differ regarding which social identity matters (nationality versus politics). Last, and somewhat surprisingly, we find a U-shaped relation between the political orientation of the decision-maker and ingroup favoritism; that is, people who are more extreme in their political orientation show stronger ingroup favoritism, but there is no difference in the favoritism shown between people who are left-leaning or right-leaning.

Our main contribution is to show that ingroup favoritism can lead to an increase in inequality. We also contribute to the literature on inequality and redistribution by adding a smooth one-dimensional distribution mechanism that allows inequality to increase and reverse.[5] The following section presents the related literature and our specific contribution to these topics.

2. Related literature

2.1. Extending the redistribution mechanism

Usually, redistribution is restricted to forms of tax-based redistribution, which does not allow inequality to increase or reverse (Tyran and Sausgruber, 2006). In our paper, the decision-maker can redistribute points among five recipients via a one-dimensional redistribution mechanism (see Section 3.2. for its definition). This mechanism allows for keeping the status quo, achieving equality, and in-between. As a novel feature, the mechanism also allows for redistributions that make the rich richer or the initially poor the new (very) rich. Previous research (List, 2007; Bardsley, 2008) has shown that fewer dictators transfer points in a dictator game in which the possibility of taking points away is included. In this respect, inequality is increased. In these give-and-take dictator games, selfishness is an important motive. In our experiment, the decision-makers do not benefit from the decisions, and it is obvious whether they use the extended redistribution mechanism to increase or reverse inequality.

2.2. Ingroup preferences

In our study, ingroup preferences can affect redistribution. This motive has been investigated in many studies (Chen and Li, 2009; Klor and Shayo, 2010; Tajfel et al., 1979; Shayo, 2020; Charness and Chen, 2020; Müller, 2019; Luttmer, 2001), while Cappelen et al. (2022) investigate determinants of moral universalism. There is more recent literature on redistribution in a heterogeneous society, both empirically, as in Magni (2021), and experimentally as in Hong et al. (2022). In this literature, redistribution is reduced but cannot be increased or reversed. However, if a favored group is ex-ante poor, people might even prefer a redistribution that reverses the income ranking and favors their ingroup (or outgroup dislike, e.g., Alesina et al., 2018a; Alesina et al., 2018b; Bursztyn

[1] Redistribution that increases or reverses inequality might seem unrealistic. However, these more extreme forms of redistribution refer to situations in which the already privileged receive the most rewards, which is frequently the case in highly competitive scenarios such as sports, the job market, academic publications, or awards. On the other hand, real-world applications of giving extra credit to ex ante underprivileged groups can be found, for example, in affirmative action programs, which have the goal of counterbalancing discrimination that occurs in other areas (Crosby et al., 2006).

[2] In this paper, we also use the term "redistribution" for changes in the income distribution that do not go from the rich to the poor.

[3] Subjects decide in several hypothetical situations as well as in the real situation without knowing whether a decision is real. The Methods section provides more details.

[4] This idea was inspired by the diploma thesis of Heusi (2006), in which unfair inequality was induced by the money participants had in their pockets. Ernst Fehr and Urs Fischbacher supervised this thesis.

[5] Note that reversing inequality can lead to higher or lower inequality compared to status quo. This means that when we talk about increasing and reversing inequality, increasing and reversing is not mutually exclusive.

et al., 2019).[6] Similarly, if a favored group is ex-ante rich, people might want to further redistribute from poor to rich, thereby increasing inequality as well. Lane (2016) reviews the experimental economics literature on discrimination behavior and finds discrimination to be somewhat limited in general and especially weak along the lines of nationality or ethnicity. Fischbacher et al. (2020) find similar results but strong discrimination against political opponents. Dimant, 2023; Finkel et al., 2020 also find this outgroup dislike in the domain of political orientation. More generally, the relevance of others' political orientation on behavior has been shown in Perez-Truglia and Cruces (2017) and Perez-Truglia (2018).

2.3. Fairness norms

In our experiment, the decision-makers receive a fixed payment for making their choices, which removes selfishness as an underlying motive.[7] Redistribution is costless, which also encourages selfish people to use it (see e.g., Almås et al., 2010; Almås et al., 2020) for studies in which redistribution is costly). These features allow for the studying of fairness concepts in isolation (Cappelen et al., 2007; Konow, 2003). Many of these concepts suggest a form of redistribution that creates a final distribution between equality and the status quo (often favoring oneself when possible). The most simple of these fairness norms is equality, which has been studied theoretically (Fehr and Schmidt, 1999) and empirically in multiple settings, for example in the dictator game (Engel, 2011; Forsythe et al., 1994), the ultimatum game (Güth and Kocher, 2014; Güth et al., 1982), or the trust game (Johnson and Mislin, 2011; Berg et al., 1995). However, whether equality is fair may be challenged when the decision-maker takes into account how the receiver obtained their initial income, specifically, whether the initial income is allocated arbitrarily or earned (Rodon and Sanjaume-Calvet, 2020; Durante et al., 2014; Cappelen et al., 2013a; Krawczyk, 2010). If the initial income is earned, proportionality (a payoff proportional to own productivity) is a strong fairness norm (Gächter and Riedl, 2006).[8] This is especially relevant in economic theory because it creates incentives to be productive in the first place.[9] This literature shows that the distinction between luck and effort as inequality-generating processes is quite established. In addition, we consider an additional aspect of inequality generation, namely an unfair mechanism, which gives more points to people who are already rich (as estimated by the dollar value of their phone, which we call "phone value"). Further, we include the variation of the inequality-generating process as a comparison to the ingroup-driven redistribution and to investigate how ingroup favoritism interacts with the inequality-generating process.[10]

2.4. Compassion or envy

Two further motivations for people's redistribution decisions can be identified by studying compassion for the poor and envy of the rich. Charness and Rabin (2002) introduce concern for the poor in a model that is confirmed in their paper and in Engelmann and Strobel (2004). Rodon and Sanjaume-Calvet (2020) find that making the poorest better off while keeping the status of the wealthiest is deemed fair across different political party supporters and income levels. However, policies that increase the wealth of the wealthiest are not considered fair across all parties and income levels. Redistributing points from the rich to the poor can be engendered by either compassion for the poor or envy of the rich. Compassion and envy have been documented as relevant predictors of redistribution attitudes in addition to self-interest (Sznycer et al., 2017), while some studies find envy to be of only minor importance (Kemp and Bolle, 2013). In addition, a finding by Kogut (2011) suggests that the level of helping a person in need depends on whether this person is perceived as responsible for the circumstances. We investigate the effects of compassion and envy by using premade decision situations that vary in the symmetry of the initial incomes, including situations with poor and rich outliers.

3. Methods

In this section, we first present the decision environment of the experiment, including the treatments. Then we describe how we set up the redistribution mechanism that also allows for increasing and reversing inequality and the redistribution measures we will use in the analysis. Finally, we present the procedures and derive the hypotheses.

3.1. Decision environment

In our laboratory experiment, participants made redistribution decisions. Participants were matched into groups of six: One person who redistributed (decision-maker) and five participants as recipients. The decision-makers always had to decide how to redistribute among the five recipients and can then decide how to redistribute these points. The redistribution decisions differed in three dimensions. First, the decision-makers got binary *identity information* about the recipients, which created an ingroup/outgroup distinction. We used nationality (native or non-native), political orientation (left or right), and a random group (whether the seat number is even or odd) as identity criteria. Second, we varied the source of inequality in the initial incomes: either the recipient's initial income was derived from a real effort task, or the income was randomly reallocated, or the income was unfairly reallocated in such a way that the person with the highest phone value received the highest initial income (and the person with second-highest phone value had the second-highest initial income, and so forth). Third, using a strategy method (the details of which follow), we varied the distribution of the *initial point income*. This means that decision-makers had to make redistribution decisions not only for the distribution that resulted from the actual performance in the real effort task but also for distributions that were premade by the experimenter. Because the decision-makers were not informed which allocations were premade, they had an incentive to report their preferences truthfully.

All participants acted as if they were the decision-maker. The actual decision-maker was randomly determined at the end of the experiment. The selected decision-maker received 200 points. Table 1 depicts the design and the premade initial distributions. We conducted Study 1 in Germany and Study 2 in the Czech Republic. Most parts of the study were the same, but there were some differences (marked by "only GER" or "only CZ"). Translated instructions can be found in the Supplementary Appendix.

Initial distribution. We used an incomplete strategy method (Bardsley, 2000) and presented the decision-maker with six pre-

[6] Bursztyn et al. (2019) find that 25 % of their sample of Pakistani men forego money when they privately must check a box thanking the US government. In three separate field experiments, Bartoš et al. (2016) find substantial discrimination against applicants from a negatively stereotyped minority.

[7] Durante et al. (2014) find that self-interest is the dominant motive if the decision-maker is involved.

[8] Indeed, Almås et al. (2020) find that the meritocratic view (i.e., only inequality due to effort is fair) is most common in both the United States and Norway, while the egalitarian view (i.e., neither inequality due to luck nor due to effort is fair) is more common in Norway than the United States, and the libertarian view (i.e., inequality due to luck or effort is fair) is more common in the United States than in Norway.

[9] A related strand of literature deals with perceptions of social mobility and different social equilibria due to beliefs about the causes of inequality and updating those beliefs (e.g. Piketty, 1995; Alesina et al., 2018b; Benabou and Tirole, 2006; Alesina et al., 2020).

[10] We do not have specific hypotheses in this respect, so this analysis is more explorative.

Table 1
Conceptual representation of the variations across trials.

Social Information	Inequality Generation	Initial Distributions
Nationality *(German or non-German)*	Effort *(real effort performance)*	Rich Outlier *(90, 100, 100, 120, 340) or (85, 90, 105, 110, 350)*
Political Orientation *(left or right)*	Luck *(random)*	Linear Inequality *(50, 90, 155, 215, 240) or (55, 95, 150, 190, 260)*
Random Seat *(seat number odd or even)*	Phone (only GER) *(value of phone)*	Poor Outlier *(25, 140, 145, 165, 180) or (40, 150, 155, 155, 180)*
		Mixed Ranking (only CZ) *(55, 100, 145, 205, 245) or (60, 95, 150, 195, 240)*

Notes: There are seven (Germany) or nine (Czech Republic) different initial distributions (Table B.1 in Appendix): two with a rich outlier, two with linear inequality, two with a poor outlier, and one based upon the points earned in the real-effort task. In these premade distributions, the rich and the poor were always segregated, that is, people of one identity were either rich or poor, and which identity was rich was balanced across the situations. In the Czech sample, we introduced two distributions with linear inequality where the order was mixed. The underlined values correspond to values for one group, for example the odd seat number. We created two versions of each inequality such that the ingroup is once poor and once rich for each type of initial distribution.

made initial distributions and one actual initial distribution. The initial points in the actual decision were determined by the performance in a real-effort task, which every participant completed at the beginning of the experiment. Participants knew that some situations were made up, but they did not know which ones. Similarly, they did not know what situation determines their payment. The premade situations (Table 1 or Appendix Table B.1) were designed to disentangle the different motives for redistribution. In these situations, groups were sorted from rich to poor (or vice versa) such that the decision-maker's ingroup was ex-ante rich in exactly three premade situations and ex-ante poor in another three situations. We used distributions with roughly linear incomes, distributions that included one poor outlier, and distributions that included one rich outlier. This enables us to compare the relative strength of compassion toward the poor and envy of the rich as different motives for redistribution. The Czech sample featured two additional scenarios in which the ingroups' recipients were either on income rank 2 and 4, or on rank 1, 3, and 5. These additional rankings are a control in which it is impossible to make all ingroup members better off than the outgroup.

Social information. This dimension refers to an ingroup/outgroup treatment in which we vary group characteristics that determine the ingroup. Decision-makers were informed about one group type the recipients belong to: nationality (German or non-German/Czech or non-Czech), political orientation (left or right), or seat number (even or odd). Nationality and political orientations were based on each subject's self-report, which was collected at the beginning of the experiment with a few distraction questions (preferring cat or dog; being vegetarian or not; and male or female). When making these choices, participants were aware that some of those attributes would be used later in the experiment.

Inequality generation. This dimension refers to the inequality-generating process, that is, whether the initial income ranking is determined by effort, luck, or phone value (phone is only in the German sample). In the Effort treatment, the initial income rank corresponded to the relative performance in a real-effort task.[11] In the Luck treatment, the initial points were randomly allocated to the five recipients. In the Phones treatment (only Germany), the income rankings were such that the person with the most expensive phone received the highest number of points (with a random mechanism to break ties). We used the estimated value of the phone[12] as a proxy for wealth to induce procedural unfairness, that is, the person with the most expensive phone also had the most points in the initial distribution, and people with the least expensive phone had the least points.[13]

Presentation of the information. Before each decision, the decision-maker learned about the source of inequality (Effort, Luck, or Phone) and about what kind of social information would be displayed in the upcoming decision (German/Czech or non-German/non-Czech, left or right political orientation, even or odd seat number). On the decision screen, the decision-maker learned about the initial points assigned to each recipient and their social information. Recipients were sorted by their initial points (in ascending or descending order randomly determined by the computer). Fig. 1 depicts a decision screen with ascending sorting, that is,

[11] All participants have 2.5 min to complete a real-effort task, specifically, the counting-zeros task of Abeler et al. (2011); see Supplementary Appendix. In the task, subjects see a table consisting of 25 numbers that can take on a value of zero or one. Participants must count the number of zeros and report it. A correct response creates 10 points of experimental currency units (ECU), whereas an incorrect response destroys 5 points of ECU. Irrespective of the accuracy of the response, a new table follows with newly randomized zeros and ones.

[12] We created a dataset with about 600 entries of phones from producers that were popular in 2018 in Germany. For these phones, we collected current cheap offers and release prices and estimated the value loss per quarter of a year with a depreciation model. The estimated depreciation rate per quarter is about 5.7%. We then calculate the estimated value of the phone according to this formula: $EstimatedValue = Priceatrelease * (0.943)^{Age \in quarters}$.

[13] Table 3 provides summary statistics of self-reports about country of origin and performance in the real-effort task.

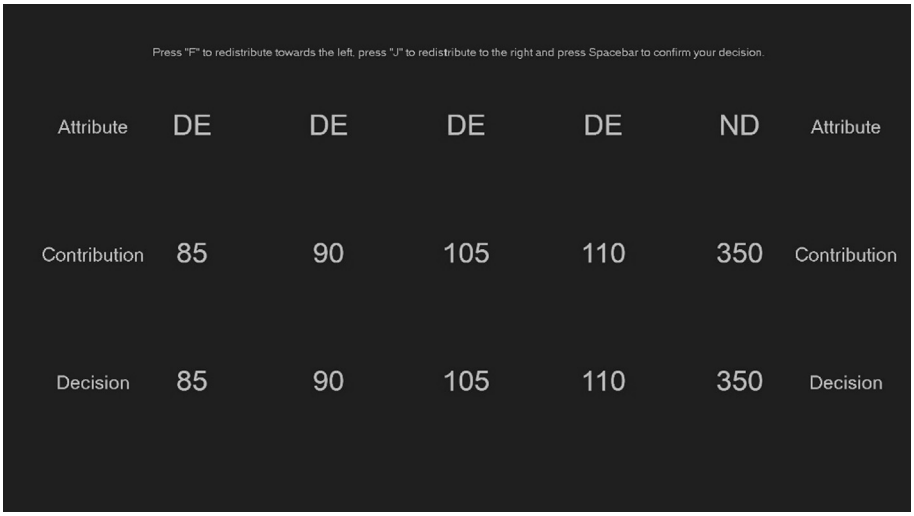

Fig. 1. Decision screen. The header is a reminder of how to redistribute points. The first row shows the social information using abbreviations that were explained in the instructions (here, DE is for German while ND is for non-German). The second row shows the information on the initial distribution (subjects learned before every decision how the income ranking was determined). The last row shows the current distribution of points and changes with the decision-maker's input. We include labels on both sides and large gaps between the information for eye-tracking purposes. For illustrative purposes, we increased the size of the relevant objects in this screenshot.

the ex-ante poorest recipient is on the left, and the ex-ante richest recipient is on the right.

3.2. Redistribution mechanism

For every decision, the decision-maker saw the social information ("Attribute") and initial points of each group member ("Contribution"), and a final row indicated the number of points currently allocated to the respective recipient ("Decision"). At the onset of each trial, the second and the third rows were equal, but the third row changed when the decision-maker pressed the F or J button. Button presses redistributed points from the visual right to left (F) or left to right (J); in the situation depicted in Fig. 1,"F" is from rich to poor, and "J" is from poor to rich. The redistribution technology is based on a power transformation with a parameter r. Specifically, let P_i be the initial share of the total points of the five recipients. Then, player i gets a share of $\frac{P_i^r}{\sum_{j=1}^{5} P_j^r}$ of the total number of points earned.[14] The parameter r changes with each press of a button. There were ten steps between status quo and equality and ten steps in both directions outside of this interval.[15] Fig. 2 depicts payoffs for each of the five recipients (y-axis) over the set of possible allocations (x-axis). For this illustration, we assume a starting distribution (status quo) of 50, 100, 150, 200, and 250.

3.2.1. Redistribution measures

Redistribution choice. This variable, which is on the x-axis in Fig. 2, is the signed number of button presses necessary to achieve this distribution. Not pressing any button (r = 1) leaves the distribution unchanged and results in the status quo, and the variable Redistribution Choice equals 0. A Redistribution Choice of 10 corresponds to ten button presses toward the initially poor (r = 0). It results in equal weights independent of the initial distribution and thus creates an equal distribution (i.e., each person would get 740/5 = 148 points in the example of Fig. 2). Decision-makers could also press more than ten times toward the poor (r < 0), reversing the rich-to-poor ranking up to a situation in which the group member with the lowest contribution receives all points (Redistribution Choice of +20 is "loser takes all"). Similarly, decision-makers could make button presses to favor the rich (r > 1), rewarding high contributions up to a distribution where the group member with the highest contribution received all points (Redistribution Choice of −10 is "winner takes all").

Signed Gini. Because the "Redistribution Choice" measure explained is specific to our setup, we also include a more commonly used measure for inequality, the Gini coefficient. However, the Gini comes with one big disadvantage: it does not consider the direction of inequality. To control for the direction of redistribution, we create a "*signed Gini.*"[16] It is the normal Gini if the income distribution is not reversed (the rich are still rich), and it is the Gini with a minus sign if the income distribution is reversed. The signed Gini has the following properties: A signed Gini of −1 means that all income has been redistributed toward the initially poorest person; a signed Gini of 0 is perfect equality; and a signed Gini of +1 has all income belonging to the initially richest person. This measure has the advantage that it provides an objective measure of inequality. Different from the Redistribution Choice measure above (number of button presses), the signed Gini of the status quo differs between the situations, as the initial inequality is different.[17]

[14] We use this mechanism because a linear extrapolation does not provide satisfactory results. For example, a tax-based redistribution with taxes lower than 0 % or higher than 100 % would result in negative payoffs. A free reallocation of income is problematic with respect to the political process, where the direct targeting of taxes and subsidies is usually not possible. To provide a one-dimensional "tax-transformation," any family of functions that varies in the convexity could serve this purpose. The power function is a particularly simple one. The exact mechanism might seem difficult, but participants did not have to understand the mechanism; they could just use the keyboard to increase and decrease inequality until they were satisfied with the distribution.

[15] If r > 0 & r < 1, then r increases by 0.1 with each button press; if r > 1, then r increases with ((1/2*#buttonpresses)/10) * (1 + (1/SD); if r < 0, then r increases with ln((#buttonpress/10 + 1.0000001) * (1 + (1/SD)), where SD is the standard deviation of the distribution.

[16] The initial income ranking determines the labels of the recipients, from x_1 (initially poorest) to x_5 (initially richest). This initial ranking is also kept for the final distribution, and the signed Gini is: $(20\,\% - x_1 + 40\,\% - x_1 - x_2 + 60\,\% - x_1 - x_2 - x_3 + 80\,\% - x_1 - x_2 - x_3 - x_4)/2$, which becomes $(2 - (4 * x_1) - (3 * x_2) - (2 * x_3) - (1 * x_4))/2$.

[17] This is not a problem when we compare treatments (except the form of inequality) because all subjects faced the same premade situation, which are the ones that the analysis uses.

Fig. 2. Set of possible allocations using the redistribution mechanism. The x-axis shows the "Redistribution Choice," which is the signed number of button presses necessary to achieve this distribution. The y-axis shows the points of the recipients. Decisions start at the status quo. Redistributing in favor of the rich always increases the Gini. Redistributing in favor of the rich lowers the Gini until equality, after which the initial poor are the new rich. If redistribution favors the initial poor substantially, the Gini can increase compared to the status quo. However, when this happens depends on the initial points of the recipients.

3.3. Procedures

Study 1 Germany: We conducted five sessions in November 2018 at the Lakelab at the University of Konstanz, Germany. The experiment was programmed in z-Tree (Fischbacher, 2007), and participants were recruited using ORSEE (Greiner, 2015). In total, 60 subjects participated (with a mean age of 21 and 56.7 % being female). After the experiment, participants completed a questionnaire including political orientation on an 11-point scale and Moral Foundations (MFQ30 variant). We report the details concerning the Moral Foundation in Appendix K.

In the experiment, subjects made seven decisions for each combination of inequality treatment (Effort, Luck, and Phones) and social treatment (Politics, Nationality, and Seat Number), resulting in 63 decisions. These 63 decisions were split into blocks of 21 by inequality treatment, while the order of decisions in the social treatments was randomized within these three blocks. The order of blocks and the order of decisions within blocks were randomized on the individual level to avoid order effects on the aggregate results. We used the strategy method in the following sense. In the end, groups of six players were formed, and one player decided how to redistribute the distribution resulting from the performances of the five other participants in the group. (Depending on the treatment, the performances were reallocated randomly or according to the phone value). However, players also made decisions for distributions that we premade. Further, every subject acted as if she were the decision-maker (i.e., strategy method). At the end of the experiment, one person per group was selected to be the true decision-maker whose decisions determined the payoffs of the five recipients. These subjects received 200 points themselves, as the redistribution did not affect them. All other subjects received the allocated points, with one point being worth 10 eurocents. Because the participants did not know whether they would actually be selected as decision-makers and what distributions were premade, they had an incentive to take all decisions seriously.

In addition to the behavioral data, we collected eye-tracking data. We used Tobii EyeX devices operating at 60 Hz, and we used chin rests to ensure roughly a 58 cm distance and constant angle to the screen and eye-tracker (see Gibaldi et al. (2017) for the adequacy of the device). The screen was 21 in. in diameter and had a resolution of 1920 × 1080. The information on the screen was organized such that it constituted non-overlapping areas of interest (AOI, see Orquin, Ashby, and Clarke (2016)). We used the DBSCAN algorithm (Hahsler et al., 2017) to classify the raw data into fixations with a minimum time of 75 ms per fixation and a 50 pixel dispersion.

Study 2 Czech Republic: We conducted nine sessions at the Jan Evangelista Purkyně University in Ústí nad Labem in the Czech Republic in May 2022. In total, 108 subjects participated in the study (with a mean age of 23.4 and 70 % being female). There were a few changes from the German study. Only Study 1 (Germany) included eye-tracking and the Phones treatment. Study 2 (Czech Republic) had two additional situations, namely situations in which the initial ranking was ABABA and BABAB, that is, rankings that make it difficult to discriminate against a particular group.[18]

3.4. Hypotheses

Our three treatment dimensions allow us to identify several motives for redistribution in a unified framework. In this section, we develop the corresponding hypotheses. First, the ingroup information allows us to identify ingroup preferences. We expect them to be an important motivation for redistribution. What type of identity will cause most ingroup favoritism? First, we expect heterogeneity in this question. However, previous studies find only slight discrimination based on nationality or ethnicity (Lane, 2016), but political orientation has gained divisional power, and strong discrimination along this dimension has been reported (Finkel et al., 2020; Fischbacher et al., 2020). Thus, we expect moderate (if any) discrimination in the Nationality and Seat Number treat-

[18] We made these changes for the following reasons: First, the results from Study 1 suggested that the phone treatment did not show very strong effects, while it took much more time because of the entry of phone types. Second, in Study 1, all situations had a clear order of ingroup and outgroup. We included these two scenarios to see whether redistribution is still strong when groups are not ordered. Third, having a lab with at least 12 eye-trackers is not common, and the eye-tracking data is not the primary interest.

ments but stronger discrimination in the Politics treatment, but consider this hypothesis as more explorative.

Further, if discrimination drives redistribution decisions, we can expect redistributions that increase or reverse inequality, that is, redistributions that make the ex-ante rich even richer or redistributions that make the ex-ante poor the new rich. Last, Study 2 (Czech Republic) has two situations, ABABA and BABAB, where A refers to ingroup and B refers to outgroup. These situations do not allow decision-makers to clearly favor recipients of their ingroup. Thus, we expect less redistribution in this setup.

H1a: *Decision-makers use redistribution to favor members of their ingroup.*

H1b: *This effect is strongest when the political group is shown.*

H1c*: Decision-makers redistribute less when the recipients are not ordered by ingroup (in ABABA and BABAB).*

To discriminate between groups, decision-makers must look at the group information. Thus, we expect decisions in which the decision-maker focuses longer on group information will show more discrimination.

H1d: *Decision-makers' attention to group information predicts discrimination.*

Second, we expect decision-makers to react to the inequality-generating process. The Effort treatment corresponds to meritocratic fairness (Konow, 2000, 2003, 2009). The Luck treatment does at least satisfy procedural fairness, while the Phones treatment is even procedurally unfair. This means that we expect the least redistribution in the Effort treatment and the most redistribution in the Phones treatment. In the latter treatment, it is natural to expect redistribution toward equality favoring the initially poor to offset procedural unfairness. The comparison of the Effort and Luck treatment has been investigated in several studies (see Cappelen et al., 2013b; Nettle and Saxe, 2020), while procedural unfairness has not been a focus of the literature. Further, need-based fairness could motivate redistribution in this treatment.

H2: *Redistribution is the lowest in the Effort treatment, followed by the Luck treatment, and it is largest in the Phone treatment.*

Third, we explore whether redistribution behavior is driven more by compassion for the poor or envy of the rich. To this end, we investigate the difference between situations with rich outliers and situations with poor outliers. While some studies suggest envy to be of only minor importance (Kemp and Bolle, 2013), others find it to be a meaningful predictor of redistribution attitudes (Sznycer et al., 2017). However, we refrain from making a directed hypothesis for the comparison of compassion and envy motives as the literature yields no clear prediction. For these motives, an analysis of attention might be helpful because outliers are salient as their payoffs differ largely from the other payoffs. Therefore, we expect attention to be especially telling and to complement behavior.

H3a: *Decision-makers are sensitive to poor outliers as well as to rich outliers.*

H3b: *Decision-makers' attention to both the poorest and richest individual predicts redistribution.*

Note that all these hypotheses concern aggregate behavior. However, we will also classify decision-makers based on the individual redistribution behavior. This allows us to look at whether there are distinct types among the decision-makers.

4. Results

Our main results refer to the ingroup preferences and are presented in Section 4.1. The other dimensions of our experiment (the inequality-generating process and the type of initial distribution) are presented in Sections 4.2 and 4.3. Section 4.4 provides a comparative assessment of the different motives and Section 4.5 describes behavioral types using a cluster analysis. In Sections 4.6–4.8, we present results that we consider as more supplementary, covering the analysis of the treatments with mixed rankings, the differences between the two samples, and how the political orientation affects redistribution behavior. Finally, in Section 4.9, we present the eye-tracking data on how attention relates to redistribution behavior.

4.1. Ingroup preferences

Fig. 3 displays cumulative distribution functions (CDFs) of redistribution choices for the within-subject treatments: group type (Politics, Nationality, and Seat) and inequality-generation (Effort or Luck).[19] Each subfigure has two separate CDFs indicating whether the own group was initially poor (maroon line) or rich (blue line). For example, the blue line in the top-left panel (Politics and Effort treatment) shows that 40 % of redistribution choices increase inequality (according to Gini) by adding more points to the already rich ingroup, 12.5 % leave the distribution unchanged, 8.5 % choose an equal split among the participants, and 5 % reverse inequality, that is, they reverse the income ranking. In contrast, there was more redistribution to the poor if the ingroup was initially poor, as the income ranking was reversed in 49 % of these cases, but only a 7 % increase in inequality in favor of the rich in this case (maroon line).

In line with hypotheses H1a and H1b, we find that people favor their own group in all social treatments given that the CDF of the rich ingroup (blue) is always to the left of the CDF when the ingroup is poor (maroon). In these situations, we find that 18 % of the choices increase inequality in favor of the rich, and 22 % of the choices reverse inequality in favor of the poor. Based on the Gini coefficient, 8.6 % of the choices not only reverse the inequality but increase inequality in comparison to the original distribution. Thus, 26.6 % of the decisions increase inequality, and 40 % of the decisions are outside of the normal bounds of redistribution (the gray area in Fig. 3). Most of these choices (85 %) favor the ingroup. Group discrimination is thus the best explanation for this more extreme form of redistribution and a strong motive for redistribution preferences in general. Behavior that increases and reverses inequality is strongest when political orientation is presented to the decision-maker (left subfigures of Fig. 3). Here, decision-makers increase inequality to favor the already rich ingroup in 39 % of cases, while 49 % reverse the income ranking to make the initially poor ingroup members the new rich group. A comparison of the middle and right subfigures in Fig. 3 shows that redistribution behavior is similar for Seat and Nationality. For these two groups, we find that if the ingroup is rich, taking from the poor to give to the rich occurs roughly 26 % of the time. When the ingroup is poor, nearly 32 % of redistribution choices reverse the rich-to-poor ranking. Comparing the Effort and the Luck treatment shows that the Luck CDFs are to the right of the CDFs of Effort, that is, there is more redistribution in favor of the poor in Luck.

Linear regressions of redistribution choice in Table 2 show the relevance of the different motives for redistribution. We discuss the models step by step and provide an overall assessment of the motives in Section 4.4. Model 1 shows the strong ingroup favoritism indicated by the negative coefficient when the own group is rich ($p < 0.001$). The magnitude and significance of this coefficient are robust across the different specifications. To assess the magnitude of the different coefficients, we note that full redistribution from the status quo to equality corresponds to ten steps, meaning

[19] Note that we use the variable "redistribution choice," as explained in the Methods section. This variable ranges from −10 (winner takes all) to +20 (loser takes all), with intermediate values of 0 (status quo) and +10 (equality). Fig. 3 shows only situations faced by both German and Czech participants jointly for both samples. In Appendix Fig. C.1, we show the same figure but with separation by country and including the phone treatment.

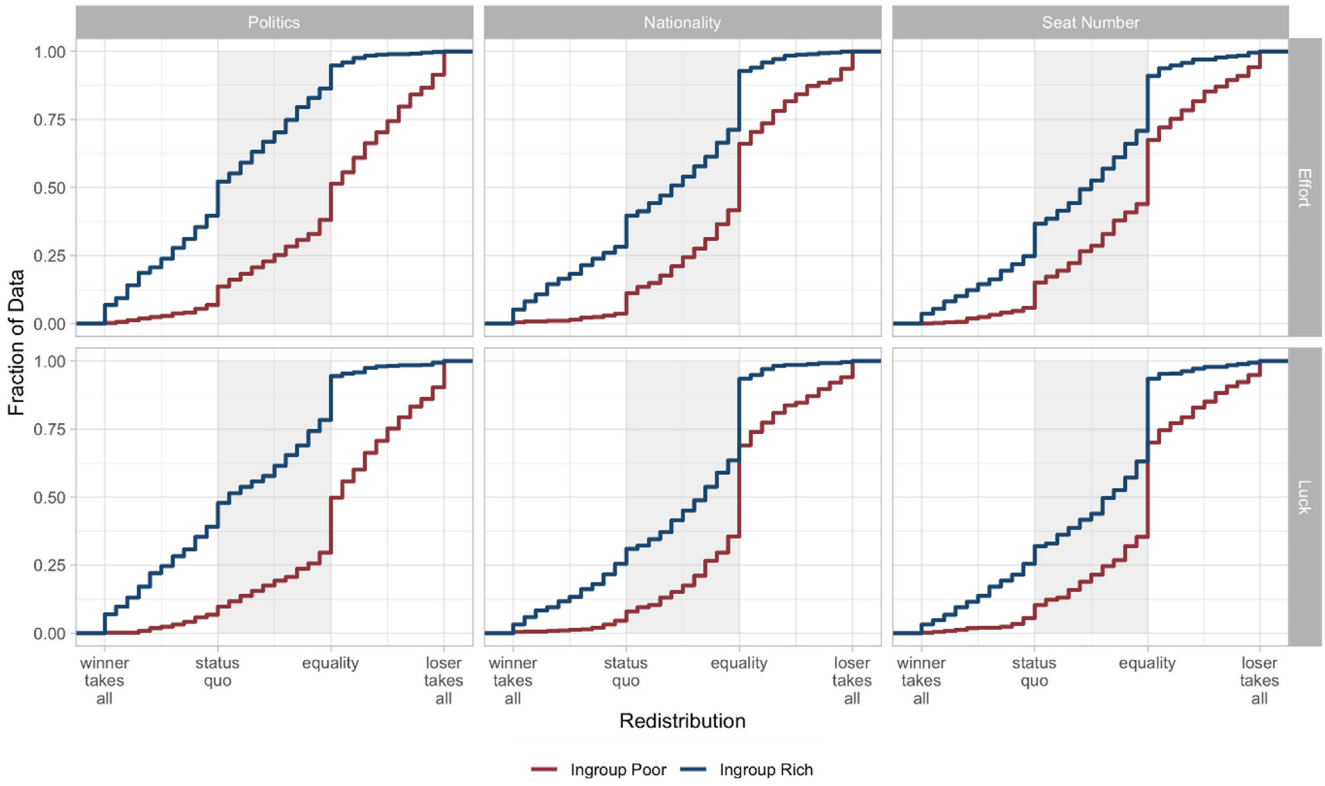

Fig. 3. Cumulative distribution of redistribution choices. The variable "Redistribution Choice" is a measure ranging from winner takes all (−10) to status quo (0) to equality (+10), and the loser takes all (+20). Each subgraph refers to a unique combination of social and inequality treatment. Colors indicate whether the ingroup was ex-ante rich or poor within each subgraph. The grey area shows the corridor between the status quo and equality. In contrast, choices on the left of this area increase inequality in favor of the winner, and choices on the right of this area reverse inequality, that is, they reverse the income ranking. The figure shows only situations conducted in both countries.

every step roughly corresponds to a redistribution of 10 %. Concerning the ingroup effect, we have about 96 % redistribution if the ingroup is poor and only about 31 % when the ingroup is rich. Further, the constant shows that, on average, the redistribution is around equality (+10) when the ingroup is ex-ante poor. Model 5 shows that the ingroup preferences are strongest for the Politics treatment (negative coefficient of Own Group Rich *Politics). Thus, the regressions confirm the strong ingroup bias, which is particularly strong for political orientation.

Result 1 (Redistribution and Ingroup): *Decision-makers redistribute to favor members of their ingroup, especially in the Politics treatment. Increasing and reversing inequality is frequently used, mainly to favor the ingroup.*

Signed Gini measure. So far, we have used the measure "redistribution choice" for the level of redistribution, as this measure gives insight into the direction of redistribution and its magnitude. We now use the measure of the "signed Gini," as explained in the Methods section. Compared to the redistribution choice measure, the main advantage of the signed Gini is that it also captures an objective level of inequality. Fig. 4 shows the initial signed Gini in blue and the post-decision signed Gini in maroon.[20]

The signed Gini (maroon) confirms the result that the final distribution depends strongly on whether the ingroup is initially rich. If the ingroup was initially poor, the final signed Gini is 0.37 points lower, and nearly all final distributions are below 0. This means that the previously poor are now the rich, and decision-makers redistributed a lot. Situations in which the ingroup is initially rich are different. Here, the signed Gini stays positive but is, on average, 0.06 points lower than the initial distribution. Thus, people prefer that the income ranking remains roughly the same but make the final distributions a bit more equal than the status quo. Nonetheless, 32 % of choices still increase inequality. Here, one notable treatment is Politics, where 41 % of choices increase inequality, and the signed Gini also increases. The higher percentage of increasing inequality if the ingroup is rich is also due to the mechanism of redistribution. Any redistribution in favor of the rich increases inequality but redistribution in favor of the poor only increases inequality if redistribution is extreme.

Fig. 5 shows the frequency of increases in the absolute value of the Gini coefficient in the different situations, separated by whether the inequality was in favor of the ingroup or the outgroup. First, inequality mainly increased in favor of the ingroup, especially in the Politics treatment. Second, inequality increased more often when the ingroup was rich because increasing inequality in favor of the poor requires more redistribution steps. Third, increasing inequality in favor of the poor was less likely when there was a rich outlier, because in this case, the initial inequality is very high and it could only be increased if few poor people would get a lot, which goes against the idea of fairness within the poor group.

Result 2 (Redistribution and Increasing Inequality): *Redistribution is more pronounced if the ingroup is initially poor, as measured by the signed Gini, which decreases by 0.37 if the ingroup is initially poor and by 0.06 if the ingroup is initially rich. This is especially true for the Politics treatment. However, choices increasing total inequality are more frequent when the ingroup is initially rich (32 %) compared to when the ingroup is poor (21 %).*

[20] For example, when comparing the initial signed Gini (blue), one can see that the different initial scenarios (rich outlier, poor outlier, or linear inequality) start with different levels of inequality. The initial inequality is not low and is highest for the rich outlier (0.36), followed closely by linear inequality (0.34) and the poor outlier (0.23). The initial Gini is slightly different between the groups as the scenarios were slightly jittered and the jitter was group-dependent (see Fig. 4).

Table 2
Motives for redistribution.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
Own Group Is Rich	−6.497***				−5.674***	−6.313***	−6.514***	−5.674***
	(0.515)				(0.612)	(0.525)	(0.521)	(0.612)
Seat Information		−0.051			−0.455			−0.455
		(0.145)			(0.264)			(0.264)
Nationality Information		base			base			base
Politics Information		−0.747***			0.893*			0.893*
		(0.177)			(0.351)			(0.351)
Luck			base			base		base
Effort			−0.738**			−0.555		−0.738**
			(0.231)			(0.288)		(0.231)
Rich Outlier				−0.098			−0.044	−0.098
				(0.128)			(0.171	(0.128)
Linear Inequality				base			base	base
Poor Outlier				0.632***			0.553**	0.632***
				(0.149)			(0.192	(0.149)
Own Group Rich *Seat					0.810			0.810
					(0.552)			(0.552)
Own Group Rich *Nation					base			base
Own Group Rich *Politics					−3.280***			−3.280***
					(0.748)			(0.748)
Own Group Rich *Effort						−0.367		
						(0.367)		
Own Group Rich *Rich Outlier							−0.108	
							(0.265)	
Own Group Rich *Linear Inequality							base	
Own Group Rich *Poor Outlier							0.159	
							(0.220)	
Constant	9.626***	6.643***	6.747***	6.199***	9.480***	9.903***	9.456***	9.671***
	(0.314)	(0.232	(0.227)	(0.207)	(0.338)	(0.325)	(0.304)	(0.338)
N	6048	6048	6048	6048	6048	6048	6048	6048
R^2	0.193	0.002	0.002	0.002	0.210	0.196	0.195	0.214
Akaike information criterion	40,060	41,349	41,344	41,350	39,944	40,045	40,054	39,977

Notes: Regression results of linear regressions with standard errors clustered on the individual level in parentheses. DV: *Redistribution choice*, i.e., the "signed" number of clicks necessary to get the resulting distribution. It goes from −10 (richest gets all) to +20 (poorest gets all); see also the Methods section. The Luck treatment, linear inequality, and nationality treatment serve as reference groups for the respective treatments. The analysis includes only the decision situations which were the same in both countries. Thus, it does not include the Phone treatment, the ABABA/BABAB scenarios, nor the distributions that are based on the actual performance. This results in 36 choices for each of the 168 participants. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

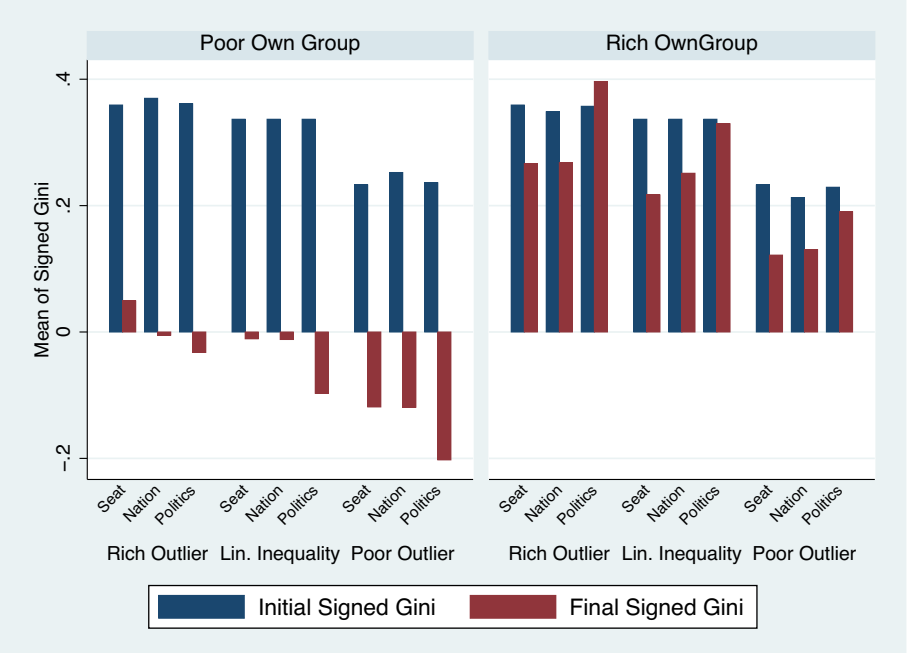

Fig. 4. Signed Gini before the decision (blue) and after redistribution (maroon). Each bar refers to a unique combination of social treatment and scenario. The left subfigure shows situations in which the ingroup was ex-ante poor, and the right subfigure shows ex-ante rich ingroups. The signed Gini is the commonly used Gini if the ex-ante income ranking stays the same and becomes negative if the income ranking is reversed. The figure shows only situations conducted in both countries. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

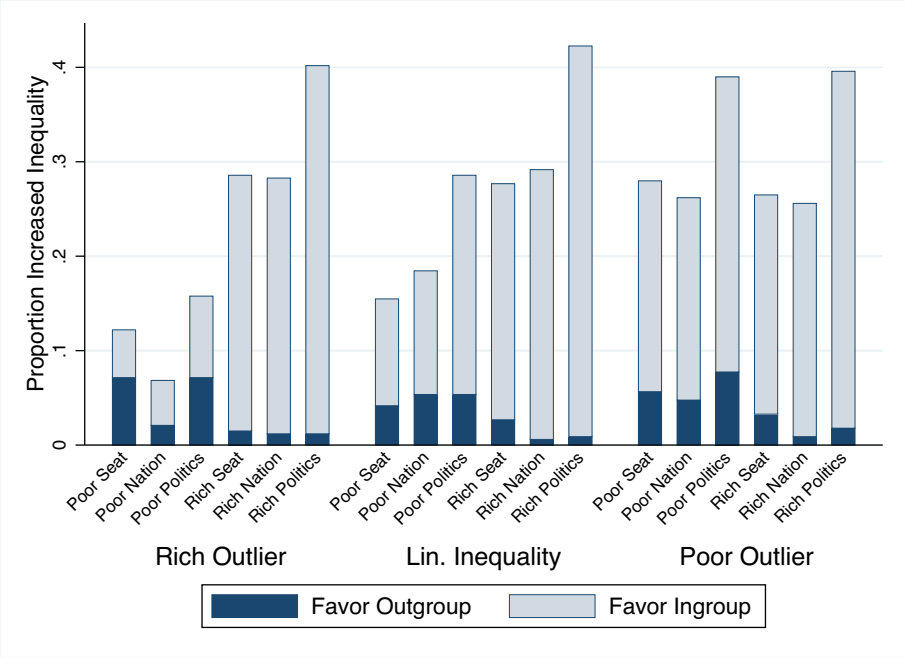

Fig. 5. Share of decisions that increase inequality in the sense that the resulting Gini coefficient is higher than the status quo. The dark lines show the situations in which the outgroup is favored; the light lines show the situations in which the ingroup is favored. The figure shows only situations conducted in both countries.

4.2. Fairness and inequality-generating process

Hypothesis H2 suggests different levels of redistribution for the different inequality-generating process treatments. Models 3 and 6 in Table 2 report the corresponding analysis. We observe lower redistribution in the Effort treatment where the initial income ranking was the result of individual productivity. The coefficient of the Effort treatment dummy in Model 3 is negative ($p < 0.01$), indicating less redistribution toward the initial poor. This suggests that the ex-ante rich are more likely to keep a higher income if the initial income ranking is based on exerted effort than if it is based on luck. However, compared to the impact of the ingroup bias, the differences between the inequality treatments are rather small. Here, the treatment effect corresponds to a difference in the redistribution of about seven percentage points, while it is about 65 percentage points in the case of the ingroup. To further investigate how the inequality-generating process matters, we also look at the Phones treatment from the German study, which can be interpreted as an unfair procedure as the person with the most expensive phone in the real world also receives the most points in the lab. Here, we find the difference in redistribution between the Phones and Luck treatments insignificant (see Appendix Table C.1). The direction, however, matches the predicted (positive) direction, which would indicate redistributing toward the ex-ante poor.

Result 3 (Inequality-Generating Process): *If the initial income is earned via effort, participants react to procedural fairness by redistributing less. However, their redistribution decision is not affected by procedural unfairness.*

4.3. Form of inequality

Hypothesis 3 concerns two competing but non-exclusive motives for redistribution: compassion for the poor and envy of the rich. We vary the form of initial inequality to study these motives. If there is a poor outlier, redistribution can be driven by compassion for the poor, and if there is a rich outlier, then envy can drive redistribution. Fig. 4 separates the situations into rich outlier, linear inequality, and poor outlier, and whether the ingroup was poor. The situations with a poor outlier result in a higher redistribution toward the poor than situations with linear inequality or a rich outlier. This pattern is present across the three group types and more pronounced if the ingroup is poor.

Furthermore, Fig. 4 again shows that the ingroup bias is a strong driver of redistribution as the ex-ante poor outlier of the ingroup ends up being the richest. Models 4 and 7 from Table 2 also confirm these results as the poor outlier situation leads to more redistribution than linear inequality, while the rich outlier is not significantly different. Taken together, our findings suggest that compassion for the poor is more important to participants than envy of the rich, as redistribution in situations with linear inequality is not different from situations with a rich outlier.

Result 4 (Type of Inequality): *Decision-makers redistribute more if there is a poor outlier in the initial distribution compared to when there is linear inequality or a rich outlier.*

4.4. Comparing the motives for redistribution

We find that ingroup preferences, the social domain of the ingroup, procedural fairness, and the type of the initial distribution matter. The regressions in Table 2 provide a comparative view of the motives for redistribution. Models 1–4 show the effect of the different motives on the level of redistribution. Models 5–7 add interactions with whether the ingroup is rich and therefore show the relevance of the motives on the ingroup effect. Model 8 provides an integrated model. As mentioned above, a coefficient of 1 in the regression corresponds roughly to a 10 percentage point increase in redistribution. Therefore, the ingroup effect accounts for a 65 percentage points change in redistribution. The difference between luck and effort accounts for only 7 percentage points. It is also remarkable that the ingroup effect is much stronger in the Political Orientation treatment—amounting to a difference of 33 percentage points. The explanatory power of the different models supports this view. Comparing Models 1–4 shows that the simple

model of whether the ingroup is rich (Model 1) has by far the highest explanatory power with an R^2 of 0.193, while the other motives have an R^2 below 0.003. When we interact whether the ingroup was rich with the different treatments (Models 5–7), we find that only the interaction with the social treatment enhances the explanatory power to a larger degree. Thus, the full model (Model 8) includes this interaction and the other treatments. This model also shows that social information, inequality generation, and the type of inequality are important motives for redistribution, while ingroup discrimination is the strongest driver.

4.5. Classification of redistribution types

So far, we have looked at the aggregate data, neglecting possible "behavioral types." A graphical representation (Appendix Fig. D.1) of all decisions for every participant shows heterogeneity in the decisions, which we further explore. To this end, we use the regression of Model 8 in Table 2 for each decision-maker individually. Then, we use the calculated coefficients for a cluster analysis using the ward-linkage method in combination with a Euclidian distance measure. The Duda–Hart Je(2)/Je(1) Index and the pseudo-t-squared yielded 4, 6, 8, and 14 clusters as potential numbers of clusters. However, some of the initially created eight clusters were rather small (n <= 6). We focus on the finer of the remaining two classifications and continue with the six-cluster solution.[21] Fig. 6 shows the average level of redistribution choice for each cluster, separated by whether the own group was rich or not, the social treatments, and the inequality generation treatments. All clusters consist of at least 16 participants. The figure also shows how many participants belong to a cluster separated by country, and the clusters are sorted by how many participants belonged to the respective cluster. The bottom of Fig. 6 shows the total levels of redistribution across all participants (N = 108 + 60).

All clusters show ingroup favoritism, but they vary substantially in the extent and direction of ingroup favoritism. Cluster I, the largest cluster, is somewhat similar to the average; In this cluster, decision-makers choose, on average, equality when the ingroup is poor and distribute less when the ingroup is rich. There is little discrimination in Seat and a bit more in Politics and Nationality. Cluster II differs from Cluster I as Cluster II discriminates less for Nationality but discriminates more with respect to Seat and Politics. Cluster III discriminates strongly with respect to Politics. In particular, the extreme forms of redistribution of increasing or reversing inequality are used when Politics determines the ingroup. Both clusters II and III consist of more German participants.[22] Cluster IV discriminates more strongly by Nationality and favors the ingroup much less for Seat number and Politics. This cluster is more important in the Czech sample. Cluster V makes extensive use of the redistribution technology and discriminates in favor of the own group irrespective of what determines the ingroup. This group increases inequality often (53.5 %) if the ingroup is initially poor and even more (80.6 %) if the ingroup is initially rich (and slightly more if the initial points are effort-based). Cluster VI has no clear ingroup preference, keeps the distributions close to the status quo, and exists only in the Czech Republic. In Appendix Fig. D.1, all participants' decisions are plotted with participants sorted by cluster. This more detailed figure also shows that there are a few participants who care clearly about effort versus luck (e.g., participants 14 and 15), where the effort treatment leads to status quo choices and luck to equality choices.

Result 5 (Heterogeneity of participants): *We find different redistribution patterns varying in the extent and direction of ingroup favoritism. There is, on average, excessive redistribution in Clusters II, IV, and V. The Politics ingroup is particularly relevant in clusters II and III, and the Nationality ingroup is particularly important in Cluster IV.*

4.6. Additional results: Mixed ingroup rankings

In the Czech sample, we also included mixed-ranking scenarios, BABAB and ABABA. Here, the letter A refers to the ingroup and B to the outgroup, and its position in the sequence indicates the position of the own group members in the income ranking, where the poorest is on the left and the richest is on the right. While the three original scenarios made redistribution to the own group simple because the ranking of the ingroup and outgroup was not overlapping, BABAB and ABABA can be seen as a control or baseline. It is more difficult to favor the ingroup in these scenarios. Still, in ABABA, participants could give all points to the poorest or the richest, transferring all wealth to the ingroup. Fig. 7 shows the cumulative distribution of the redistribution choice separated by whether the ingroup was rich, the ingroup was poor, or whether the ingroup was mixed with the outgroup (scenario BABAB or ABABA).

As one can see, the ABABA and BABAB scenarios are very similar and lead to redistribution, which is roughly in-between the redistribution of when the ingroup is rich or poor. In fact, participants redistributed toward the already rich similarly little in the ABABA/BABAB as if the ingroup were poor, while they reversed the income ranking similarly little as if the ingroup were rich. This suggests that ABABA/BABAB can be seen as a baseline for redistribution. Note that even in the ABABA/BABAB scenarios, there is still giving to the already rich and reversals of the income ranking.

Result 6 (Mixed Ingroup Ranking): *If the recipients' ingroup is scattered in the ranking, participants redistribute less to favor their ingroup. Still, >20 % of choices increase inequality or reverse the income ranking.*

4.7. Additional results: Differences between the two samples

As mentioned before, we ran the experiment in two locations, in Germany and in the Czech Republic. We find some behavioral differences, for example, in the number of participants in each cluster in Fig. 6 or when we split Fig. 3 by country in Appendix Fig. C.1. In this section, we explore whether these differences might be driven by sample differences. Table 3 below shows that there are many similarities between the two samples (effort performance, share of native participants, age), but also some differences (political orientation, gender).

We find that the proportion of women might be driving some behavior differences between the samples. Fig. 8 shows the signed Gini separated by country (left and right panels), gender, and whether the ingroup is rich. The original sample in Germany (right) shows little gender difference. In the Czech sample, however, women do not reverse the income ranking if the ingroup is initially poor. Overall, we find women's redistribution is less extreme than men's, and this difference is more pronounced in the Czech sample. In addition, the Czech sample has a higher share of women. Together, this can explain some of the gender differences. The other variable that differed between the two samples, political orientation, seems to affect our results less (see Appendix Fig. J.1).

4.8. Additional results: Political orientation and redistribution

We employ linear regressions with political orientation as a predictor of the redistribution choice variable, as well as the signed

[21] In Appendix Fig. G.1, we show the average coefficients per cluster. The Appendix Figs. G.2–G.5 show the 4-, 8-, 10- and 14-cluster solutions.

[22] We also did the classification only for the German sample (Fig. H.1). Here, we also added a different clustering approach: we used a k-means cluster approach to produce five clusters based on the redistribution in each situation (54 different values per person). The results are reported in Appendix Fig. H.2. We find that 70 % of participants are in the same cluster as with the ward-linkage method.

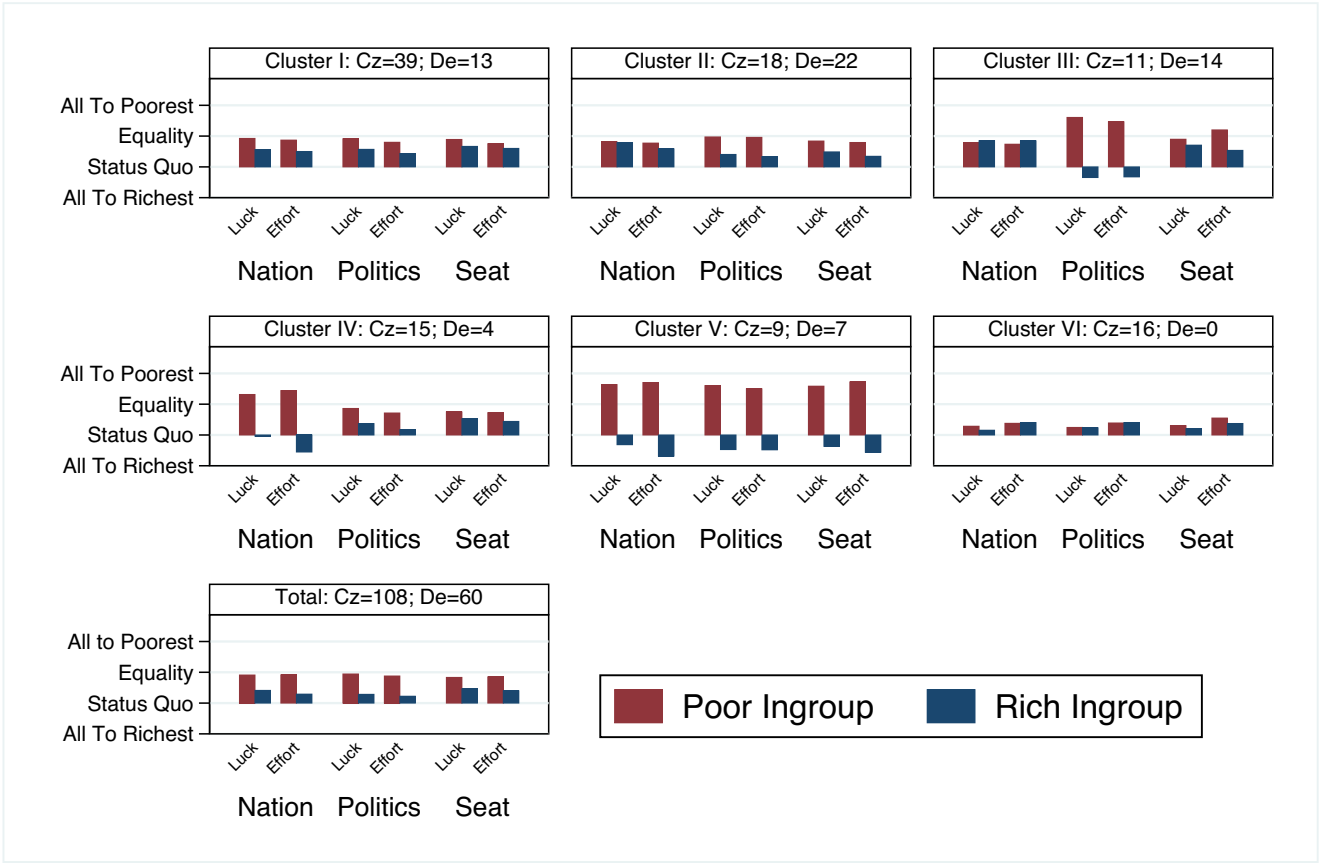

Fig. 6. Mean of redistribution choice for each cluster separated by whether the ingroup was poor (red) or rich (red), the type of social information (Nation, Politics, Seat), and the inequality generation (Effort, Luck). The title indicates the number of participants in each cluster separated by sample country. The figure shows only situations conducted in both countries. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

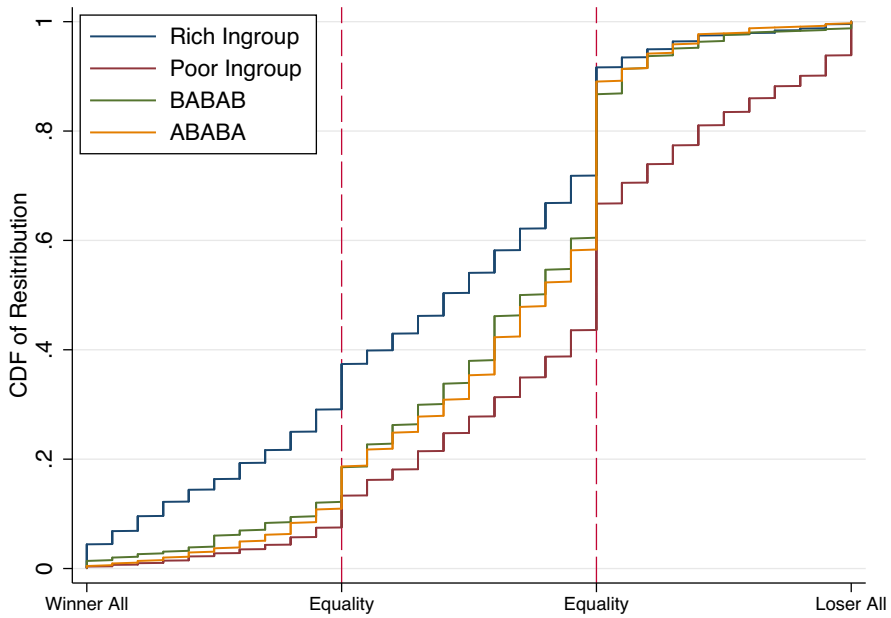

Fig. 7. CDF of redistribution separated by situations where the ingroup was rich, the ingroup was poor, and when the ingroup was mixed with the outgroup (BABAB and ABABA, where A refers to ingroup). The data comes from the experiment in the Czech Republic.

Table 3
Sample difference between the two studies.

	German Study (N = 60)	Czech Study (N = 108)
Political orientation: Left	85 %	42.6 %
Gender: Female	56.7 %	70.4 %
Nationality: Native	93.3 %	92.6 %
Real Effort Performance	115.1	115.6
Age	21.1	23.4

Notes: The table shows the characteristics of the two samples. These are the binary variables: Political orientation left (vs. right), gender female (vs. male), nationality native (vs. non-native), real effort task performance, and age.

Gini coefficient and "normal" Gini coefficient of the final distribution (see Appendix Table E.2). The political orientation of the decision-makers is not significantly related to redistribution choice, nor to the signed or unsigned Gini coefficient.

Result 7: The *political orientation of the decision-makers does not predict redistribution.*

As political orientation does not seem to affect decision-making, we also explore whether political extremeness can explain redistribution behavior. We find that political extremeness relates to more to ingroup favoritism. Fig. 9 shows the relationship between signed Gini and political orientation using a polyfactorial fit. When the ingroup is poor, the shape is an inverted U. The political center is roughly at equality, while both extremes make the former poor ingroup richer. Accordingly, the fit is a U-shape if the ingroup is rich, indicating that the extremes favor their ingroup more, while the center is closest to equality.[23]

Result 8: *Decision-makers with more extreme political views favor the ingroup more strongly.*

4.9. Results: Attention and redistribution

Given the prevalent group discrimination reported before, we now investigate the decision-makers' attention to different pieces of information using eye-tracking data as proposed in hypotheses H1d and H3b. Note that this part includes only the German sample, as we did not collect eye-tracking data in the Czech Republic. First, we analyze the relationship between the decision-maker's attention to group information and discrimination, where attention is measured by the share of decision time spent looking at group information.[24] Importantly, discrimination is assessed as the difference between the average points given to the ingroup and the average points given to the outgroup. Table 4 shows a positive relationship between relative attention to group information and discrimination.

Result 9 (Attention and groups): *Decision-makers' attention to group information predicts discrimination.*

We follow up on the behavioral result that a poor outlier scenario leads to more redistribution than a rich outlier (see Result 4). We do so by investigating how a decision-maker' attention to the poorest or richest recipient relates to the redistribution decision. Fig. 10 shows the redistribution behavior and the share of time spent by the decision-maker on the ex-ante poorest or richest (left and right panel) with linear predictions for the relation between this redistribution choice and share of attention. We find higher redistributions when decision-makers pay relatively more attention to the poorest recipient but not when they pay relatively more attention to the richest recipient. These results are supported by linear regressions reported in Appendix Table E.1.

This result is not caused by rich outliers receiving less attention than poor outliers. Fig. 11 shows a graphical representation of the

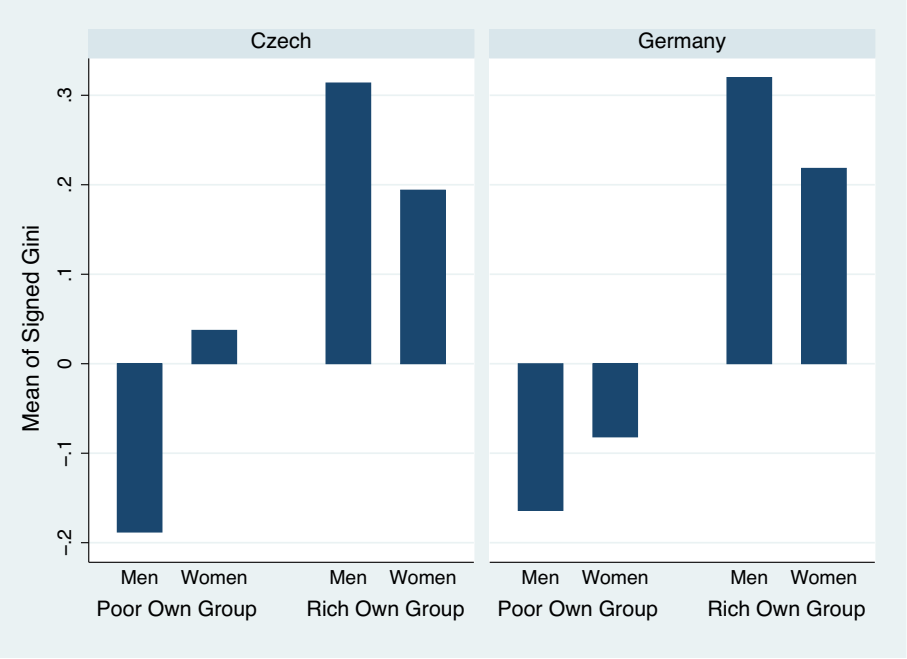

Fig. 8. Mean of signed Gini (−1 indicates that all final points are with the initially poorest, 0 indicates equal final distributions, +1 indicates all final points are with the initially richest) between the two countries separated by gender and whether the ingroup is initially poor or rich.

[23] Regression analyses confirm the inverted U-shape for ingroup poor (with the squared and the simple term at p <=0.001) and marginally for the U-shape for the rich ingroup (both p's = 0.07). We can also combine both scenarios and use the absolute Gini. Here, we find a U-shape with both p < 0.01.

[24] Absolute time spent looking at information would bear the risk of a confounding factor: Because it requires more button presses to reach a situation further away from the status quo, extreme redistribution mechanically takes longer in our setting. Thus, we employ a relative measure of attention in our analyses.

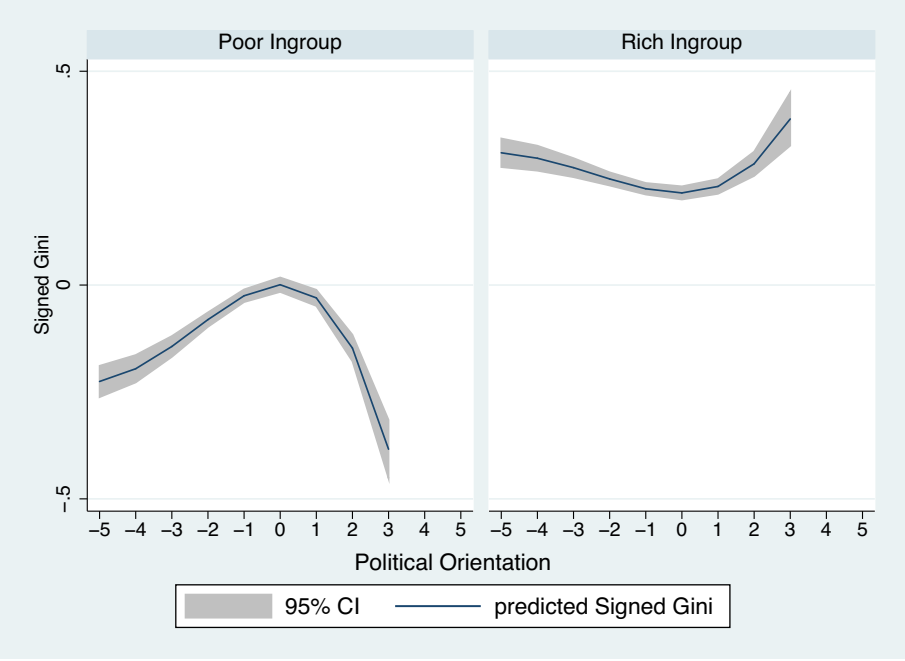

Fig. 9. Fit between the signed Gini (−1 indicates that all final points are with the initially poorest, 0 indicates equal final distributions, +1 indicates all final points are with the initially richest) and political orientation (-5 is very left, +5 is very right) separated by whether the ingroup is poor or rich.

Table 4
Discrimination and attention to group information across social treatments.

Discrimination Proxy	All	Politics	Nationality	Seat Number
Share of time spent on group info	565.915***	800.687***	458.770***	512.037***
	(81.346)	*(115.017)*	*(76.899)*	*(118.658)*
Constant	26.281**	56.522***	1.779	11.657
	(9.475)	*(14.447)*	*(7.774)*	*(11.741)*
N	3234	1078	1079	1077
Adjusted R^2	0.096	0.135	0.093	0.094

Notes: Regression results of linear regressions across the social treatments with clustered standard errors in parentheses. DV: Discrimination, which is the average points given to the ingroup minus the average points given to the outgroup. Six observations have no eye data. The share of time spent on group information ranges from 0 to 1 (i.e., only group information is inspected). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. This regression is based on the German data and includes the Phones treatment.

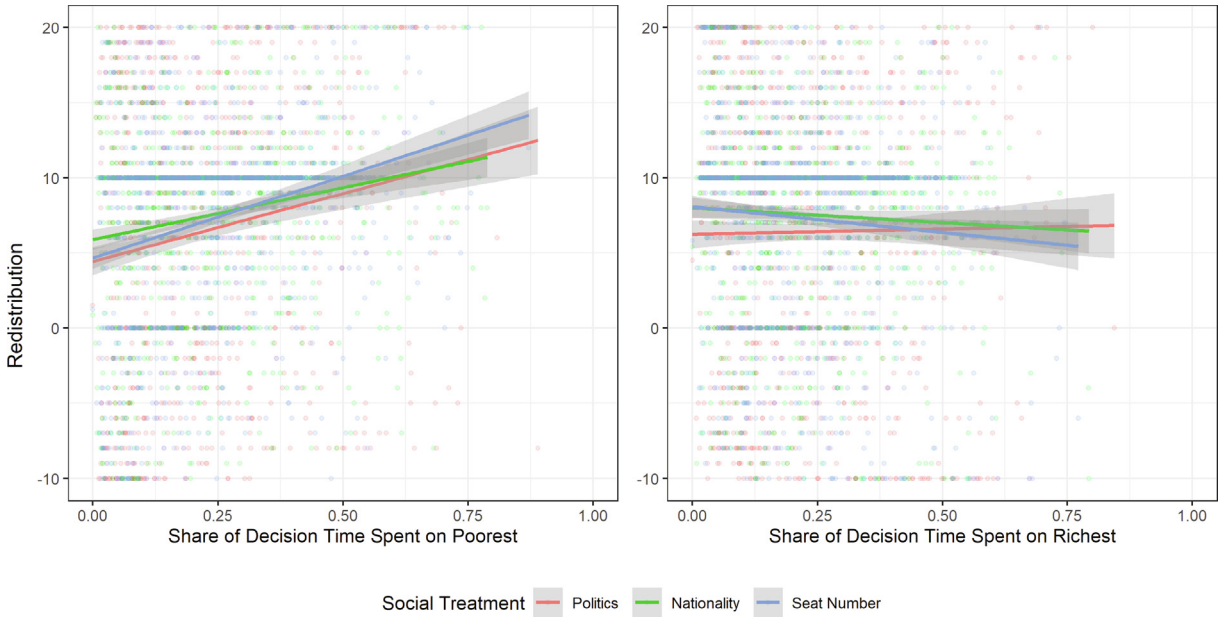

Fig. 10. Scatterplot showing redistribution and share of decision time spent on the ex-ante poorest (left) and richest (right) group member with added linear predictions and 95 % confidence intervals. Colors reflect social treatment.

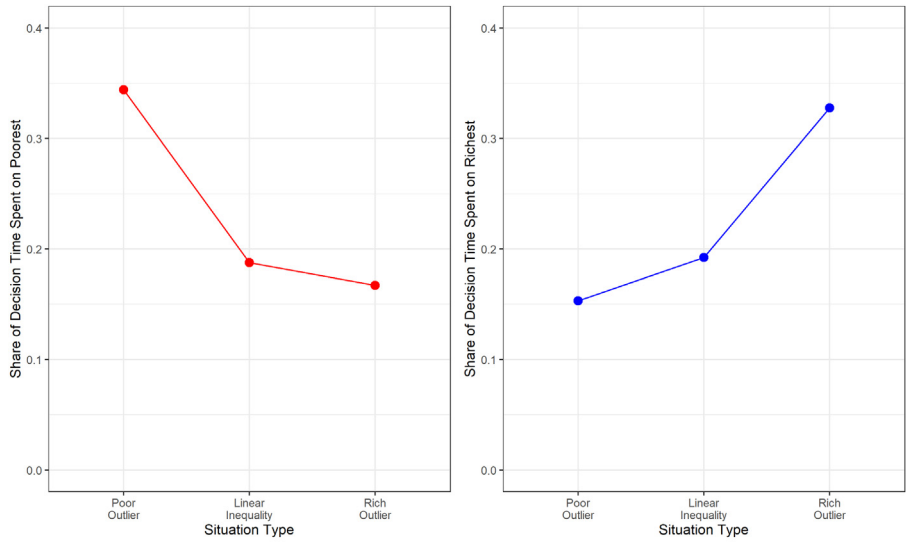

Fig. 11. Attention to the poorest (left) group member and richest (right) group member by situation type. The data comes from the German experiment.

decision-makers' attention to the poorest and richest recipients in their respective situations. The pattern of attention is strikingly similar for poor and rich outliers: In premade situations with a poor outlier, the poorest recipient receives roughly twice the attention of the richest recipient (34 % versus 17 %), and vice versa in premade situations with a rich outlier. Moreover, the poorest and the richest receive similar attention in linear inequality situations. Thus, despite paying relatively similar attention to both kinds of outliers, decision-makers do not redistribute more in situations with a rich outlier. Therefore, our data suggest a deliberate choice to react to the poor outlier but not to the rich outlier. This is in line with a compassion-based redistribution motive or maximin preferences (Charness and Rabin, 2002), but not with an envy-based redistribution motive.

Result 10 (Attention and outliers). *Decision-makers' attention to the poorest group member predicts redistribution, but attention to the richest does not.*

5. Summary and conclusions

We present an experiment with a new redistribution mechanism, which also provides decision-makers the option to increase inequality in favor of the rich or to reverse income ranking in favor of the originally poor. We use a setup in which several motives and their interaction can be investigated. These motives include group discrimination with varying group types (based on political orientation, nationality, or seat number), different sources of initial income (earned, luck, or even phone value-based), and different types of inequality (linear and poor versus rich outliers). We find that ingroup favoritism is a strong motive for redistribution, and it dominates redistribution that increases or reverses inequality. Based on regression Model 1 in Table 2, we estimate a 65 percentage point higher level of redistribution if the ingroup is poor compared to when the ingroup is rich. In particular, the decision-makers use the options to increase or reverse inequality in 40 % of the time, almost exclusively to favor their group. We find that 26.6 % of the decision-makers' final choices increased inequality. The direction and level of redistribution are multidimensional, but we can summarize the results into the following three main findings.

Ingroup Bias Dominates.: The strongest predictor of redistribution behavior is whether the ingroup members are ex-ante rich or poor. Nearly all redistribution choices (85 %) that increase or reverse inequality favor the ingroup, thereby making discrimination the best explanation of (extreme) redistribution and a strong motive for redistribution preferences in general. This is true in all three social treatments but is by far the strongest when political orientation is displayed. The classification yields that most participants belong to a cluster that displays a more extreme form of ingroup favoritism for specific groups. In contrast, one cluster (cluster V) favored the ingroup irrespective of the social domain of the ingroup. In the case of political orientation, a preference for punishing the other group for their opposing opinion could be a motive for the observed ingroup preference, which goes beyond an ingroup bias in a narrow sense. In our experiment, we cannot distinguish between ingroup love and outgroup hate (Halevy, Bornstein, and Sagiv, 2008). Experiments with the option to harm others could shed light on this question.

Fairness Matters. We observe moderate effects for procedural fairness considerations: If the ex-ante distribution of points results from individual performance in a real-effort task, participants are more hesitant to redistribute compared to situations in which the ex-ante allocation is the result of luck or based on the value of the recipient's phone. However, this difference is not very large. It amounts to a redistribution-level difference of about 7.5 percentage points. Using the value of the phone to induce procedural unfairness, we find only a small tendency (if any) to redistribute in favor of the poor even though more attention was on this information compared to a random initial distribution. Fairness seems to be an important benchmark for the final distribution, as 23 % of the decisions result in equal incomes across the five recipients.

Compassion Over Envy. We find evidence in the behavioral data that redistribution behavior is motivated by compassion for the poor but not envy of the rich. This pattern shows up irrespective of how the initial income rank is generated. The processing data reveals that the ex-ante outlier receives roughly one-third of the attention irrespective of whether they are poor or rich. In contrast, the ex-ante poorest and richest non-outlier receive<20 % of the attention. Thus, the decision-maker notices both the ex-ante poor and rich outliers, but only their greater attention to the poor is related to redistributing in the poor's favor, further supporting the motive of compassion.

The political orientation of the decision-maker was a strong potential candidate for explaining redistribution given that redistribution policies are one of the main conceptual determinants of

political orientation in economic contexts. In contrast to the economic intuition of left and right politics (the left favoring redistribution more than the right), we find no effect of political orientation on redistribution. It seems that economic aspects have become less important, and the left-to-right scale now is more determined by identity and attitudes on migration, globalization, gender, and minorities. Indeed, a similar conjecture is debated by Lachat (2017) who argues in favor of a non-linear relation between an economic and a socio-cultural left-to-right dimension.

Decision-makers frequently use the options of our redistribution mechanism to increase and reverse inequality, mainly to favor the ingroup and most strongly when the ingroup is based on political orientation. The experiment shows the importance of ingroup preferences and identity for redistribution preferences in heterogeneous societies (Alesina et al., 2018a; Finkel et al., 2020; Akesson et al., 2022). This implies that manipulating the relevance of group identity can be an effective measure to influence acceptance of and resistance to redistribution.

Data availability

Data will be made available on request.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jpubeco.2023.104866.

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