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# Redistribution beyond equality and status quo – heterogeneous societies in the lab[1]

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Selfishness and fairness are important drivers of redistribution, but recently an additional motive got into focus. In heterogeneous societies, ingroup preferences can be an important determinant of redistribution decisions. In a laboratory experiment, we investigate the relative importance of the different motives. We create heterogeneity by providing subjects with information about a social group of recipients (nationality, minimal or political orientation), we manipulate how initial inequality is generated (earned, random or unfair) and the shape of the distribution. Further, we extend the redistribution mechanism to go beyond the limits of status quo and equality. We find ingroup favoritism to be the strongest motive; decision-makers almost exclusively use extreme forms of redistribution to favor members of their own social group. We complement the behavioral data with eye-tracking data, showing that attention to the social group information and to poor outliers are indicative of redistribution.

**JEL Codes:** D31, P16, D91, C91

**Keywords:** income redistribution, group bias, social preferences, political economy, processing

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## 1 Introduction

Redistribution of income or wealth is a heavily debated topic. The question of how (and whether) income should be redistributed is a major concern in all societies, especially since debates about income inequality became omnipresent (e.g. Piketty's *Capital in the twenty-first century*, the income gap widening as the very richest passing through the 100 billion or sports stars sign contracts worth more than $450 million, while nearly half of the world lives on $5.50 per day).[4] The supporters of redistributive policies frequently suggest fairness, equality, and compassion for the poor as relevant motives for redistribution (see Rodon and Sanjaume-Calvet (2020) for a recent multidimensional survey-study on the perception of fairness). Recently, the question of how heterogeneity in the population affects redistribution choices has received increased attention (Alesina et al. 2018a; Alesina and Stantcheva 2020; Shayo 2020). Alesina et al. (2018a) show that respondents overestimated the share of immigrants. More importantly, the perception of the immigrants was too negative as immigrants were perceived to be religiously and culturally more distant, economically weaker and more likely to receive governmental benefits than they truly were. This perception affects redistribution choices as thinking about immigration, but also stating facts, led to lower levels of redistribution. Thus, the heterogeneity of the recipients might be a crucial, and overlooked, factor when investigating redistribution decisions.

We investigate the motives of redistribution in a heterogeneous society in a laboratory experiment, in which the decision-makers are unaffected by the choice. Because the preference for the own group might be very strong, especially when political orientation is mentioned (Finkel et al. 2020), we remove the common limits of redistribution being strictly inequality-decreasing, which is usually achieved by using different tax rates (Esarey et al. 2011; Klor and Shayo 2010; Durante et al. 2014) or transfers (Tyran and Sausgruber 2006). To be more specific, we allow for redistributions that increase inequality by making the rich even richer and for redistributions that invert the income ranking such that the ex-ante poor become rich. These more extreme and so far neglected forms of redistribution refer to situations in which the already privileged receive nearly all rewards, which is frequently found in highly competitive

[4] https://www.worldbank.org/en/news/press-release/2018/10/17/nearly-half-the-world-lives-on-less-than-550-a-day

scenarios such as sports, the job market, academic publications, or awards. Also, real-world applications of giving extra credit to ex-ante underprivileged groups can be found,[5] for example, in affirmative action programs. One main line of reasoning put forth by supporters of affirmative action is to counterbalance discrimination that occurs in other areas (Crosby et al. 2006). This argument can motivate redistribution that exceeds equal outcomes in specific situations in order to increase overall equality. Further, allowing for an extension of the redistribution allows to circumvent potentially artefactual findings. Here, List (2007) and Bardsley (2008) show that extending the action space in dictator games to include the possibility of taking, leads to less people transferring points to the other person. Thus, offering only final distribution between status-quo and equality might lead to higher shares of these two norm-equating outcomes even though the decision-makers might have preferred to choose a more extreme outcome.

We explore the relevant motives that affect redistribution. The first motive is the preference for the well-being of the own social group (Chen and Li 2009; Klor and Shayo 2010; Tajfel et al. 1979; Shayo 2020; Charness and Chen 2020). If a favored group is ex-ante poor, people might prefer redistribution that exceeds equality and reverses the income ranking, potentially ending up in extreme inequality (relatedly is out-group dislike, e.g. Bursztyn et al. (2019) who find that 25% of their sample of Pakistani men forego money when they privately have to check a box thanking the US government, or Alesina et al. (2018a)). 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) reviewed the experimental economics literature on discrimination behavior and found it to be rather limited in general, and especially weak along the lines of nationality or ethnicity. Fischbacher et al. (2020) found similar results with the exception of strong discrimination of political opponents. This outgroup-dislike in the domain of political orientation is also found by Finkel et al. (2020). They look at political polarization and find that out-group hate started to dominate in-group love across both parties in the US. However, while social identity is connected to redistribution, redistribution does not necessarily favor the own group. Here, Shayo (2009) finds support for redistribution to be negatively correlated with national identification,

[5] A recent conjoint survey study (Beetsma et al. 2020) in the early phase of the Corona pandemic (March 2020) explored different EU policy packages, and found that the most supported package was one which might end up in long-run shifts towards poor countries, i.e. rich countries might get less than they paid and the opposite for poor countries.

which, in turn, is also negatively correlated with wealth. This suggests that redistribution preferences strongly depend on the type of information about the recipients of redistribution. To investigate the effects of social identities, we vary which type of information about the recipients is shown in the experiment.

If selfishness does not affect redistributions, then fairness concepts are a natural candidate for driving redistribution decisions (Cappelen et al. 2007; Konow 2003). Many of them suggest a form of redistribution that creates a distribution somewhere between equality and the status quo (often favoring oneself). The most simplistic of these fairness norms is inequality aversion, which has been discussed theoretically (Fehr and Schmidt 1999) and empirically in multiple settings, i.e. Dictator Game (Engel 2011; Forsythe et al. 1994), Ultimatum Game (Güth and Kocher 2014; Güth et al. 1982) or Trust Game (Johnson and Mislin 2011; Berg et al. 1995). However, equality can be challenged as being fair when taking into account how the initial income is determined, i.e. whether the initial income is allocated arbitrarily or earned (see 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). This is especially relevant in economic theory because it creates incentives to be productive in the first place.[6] Indeed, Almås et al. (2020) find that the meritocratic view (inequality due to effort is fair) has the highest share in both the US and Norway, while the egalitarian view (inequality due to luck or effort is not fair) has a higher share in Norway than the US and the libertarian view (inequality due to luck or effort is fair) has a higher share in the US. We also consider an additional aspect of inequality-generation, namely an unfair mechanism which gives more points to people which are already rich (as estimated by the phone-value). When the initial income is not earned, but the result of an unfair process giving more to the already rich, redistribution towards the poor might increase to counterbalance the procedural unfairness. Thus, there might be some general fairness preferences affecting redistribution, but redistribution might also be strongly affected by how the initial inequality is generated. We will look at general fairness preferences

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

using an initial random income ranking, while procedural fairness and procedural unfairness are implemented via an effort task or using the participant's phone value. We use an unaffected decision-maker setting to remove selfishness motives from the decision problem. Durante et al. (2014) find that self-interest stands out as the dominant motive if the decision-maker is involved. Additionally, all final distributions have the same total welfare and redistribution is costless (see e.g. Almås et al. (2010); Almås et al. (2020) for studies where redistribution is costly).

Another motivation for redistribution is the treatment of extreme cases, i.e. how are the poorest and richest person treated. If there is an income ranking, there is necessarily a wealthiest and a poorest individual. Charness and Rabin (2002) have introduced a concern for the poor in a model, which has been confirmed in their paper as well as, e.g. Engelmann and Strobel (2004). Rodon and Sanjaume-Calvet (2020) found that making the poorest better off, while keeping the status of the wealthiest, is deemed fair across political party supporters and income levels. However, policies that increase the wealth of the wealthiest are not seen as fair across all parties and income levels. Redistributing points from the rich to the poor can be caused by either compassion for the poor and envy towards the rich. Compassion and envy have been documented as relevant predictors of redistribution attitudes on top of self-interest (Sznycer et al. 2017), while some studies found 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 situations with rich outliers.

The different motives for redistribution preferences (i.e. group preferences, fairness, inequality-generation, compassion/envy) can be mapped onto the moral dimensions proposed in the Moral Foundations Theory (MFT, see Graham et al. (2009); Graham et al. (2011); Haidt and Graham (2007); Haidt (2007); Haidt and Joseph (2004)). The MFT suggests human morality to be based on intuitions that are related to five foundations: Harm, Fairness, Ingroup, Authority, and Purity. The potential motives for redistribution mentioned before can be related to the first three foundations. Compassion for the poor would be related to the Harm-foundation, which is concerned with physical and mental

well-being of other living creatures. It supports values such as empathy and condemns cruelty and aggression. Fairness-based motives are found in the Fairness-foundation which includes envy towards the rich, but also proportionality. This foundation generally endorses justice and reciprocity and condemns cheating. Last, the discrimination motive is captured by the Ingroup-foundation that concerns loyalty and extends to placing the benefit of the group above self-interest.[7]

In our experiment, we expect that decision-makers who strongly endorse the Harm and Fairness foundations redistribute more, while decision-makers who strongly endorse the Ingroup-foundation redistribute conditionally on the group membership of the recipients. Multiple studies (see e.g. Graham et al. (2009)) have found that Harm and Fairness are especially important to politically left individuals, while Ingroup, Authority, and Purity are more important to politically right individuals. Thus, we can expect politically left decision-makers to redistribute more in general, which also fits the economic understanding of political leftism as pushing for more redistribution and market interventions. Since politically right individuals endorse ingroup-related norms more, we can expect them to also discriminate stronger against their outgroups which has been documented repeatedly in the social psychology literature (Federico and Sidanius 2002; Jost et al. 2003). However, Iyengar and Westwood (2014) find strong discrimination against political opponents without a general trend of one side discriminating more aggressively. Similarly, Fehrler and Kosfeld (2013) find subjects who identify with certain NGOs (AI, WWF) to strongly discriminate against those who do not identify with these NGOs, but subjects who identify with these NGOs arguably have more left-leaning views than those who do not identify with them. This is in line with the idea that both liberals and conservatives discriminate against whom they perceive to be a violator of their values (Wetherell et al. 2013). Therefore, and considering data from another experiment (Fischbacher et al. 2020), the link between political orientation and intergroup discrimination is not clear.

We use a third-party design with a novel redistribution mechanism that allows redistribution beyond the usual bounds. We provide information about a social group, which is nationality, political orientation or

[7] The remaining two foundations, Authority and Purity, are conceptually unrelated to our study.

seat number. In addition, we use three inequality-generating processes – performance, luck and one that is based on procedural unfairness. The latter is induced by determining the initial income ranking according to the participants' cellphone values.[8] We investigate compassion for the poor and envy towards the rich using pre-specified initial distributions. We disentangle these three motives for redistribution (ingroup, inequality generation, compassion vs envy) and separate them into a single framework. Further, we account for Moral Foundation Theory and political orientation as they conceptually predict specific redistribution behavior. Finally, we employ eye-tracking technology in order to understand the underlying motives. Eye-tracking technology has been successfully used to identify the relative importance of different pieces of information, giving additional insights into the decision process and its underlying motives, e.g. Jiang et al. (2016); Polonio et al. (2015); Rahal et al. (2020).

Our results show that redistribution is very common and strongly motivated by intergroup discrimination. Roughly 43% of redistributions go beyond the status quo and equality, thereby increasing inequality or inverting the income ranking, and mainly favor the own group. Moreover, participants do care about fairness and also about procedural fairness, i.e. redistribution is lower if the ex-ante distribution is the result of individual effort. However, we find not much difference between situations where the ex-ante distribution is the result of pure luck and situations where the ex-ante distribution results from an unfair procedure. Further, compassion for the poor proves to be an important motive for redistribution, but envy towards the rich is not. A classification of redistribution types further reveals that the largest group (more than 33%) is the one closest to choosing an equal split on average, while the other groups are characterized by displaying different levels of ingroup-favoritism for different social groups. Our behavioral results are complemented by the processing data as more attention on the social groups and poor outliers relate to redistribution, while this relationship is absent for the attention on rich outliers.

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

## 2 Methods

### Decision environment

In our laboratory experiment, subjects make redistribution decisions. Participants are matched into groups of six: One person who redistributes (decision-maker) and five participants as recipients. First, the recipients perform a real-effort task. The output in this real-effort task determines the recipients' initial distribution, where, depending on the *inequality-generating* process, the individual outcomes are assigned to other recipients. Then, the decision-makers decide how to redistribute those points. We make use of an incomplete strategy method (Bardsley 2000) and present the decision-maker with several initial distributions without telling in advance, which is the relevant one. The redistribution decisions differ in three dimensions: The decision-makers get binary *social information* about the affected recipients which induces an ingroup/outgroup distinction. The *inequality-generating* process determines how the outcomes in the real-effort task are allocated to the five recipients. Finally, different *initial distributions* are used. A graphical representation of the design is depicted in Table 1. The translated instructions can be found in the Supplementary Appendix.

*Table 1: Conceptual Representation of the variations across trials*

| ***Social Information*** | ***Inequality-Generation*** | ***Initial Distribution*** |
|---|---|---|
| *Political Orientation*<br>(left or right) | *Effort*<br>(performance in real effort task) | *Rich outlier*<br>(e.g. 90, 100, 100, 120, 340*)* |
| *Nationality*<br>(German or non-German*)* | *Luck*<br>(random) | *Linear inequality*<br>(e.g. 50, 90, 155, 215, 240) |
| *Random Seat*<br>(odd or even number) | *Phones*<br>(value of phone) | *Poor Outlier*<br>(e.g. 25, 140, 145, 165, 180) |

Note: There are 7 different initial distributions (Table 8 in Appendix): 2 with a rich outlier, 2 with linear inequality, 2 with a poor outlier and one was based upon the points earned points in the real-effort task.

*Social Information*. The first dimension refers to an ingroup/outgroup treatment, in which we vary social group characteristics. Decision-makers are informed about one social group the recipients belong to. This is Nationality (German or non-German), Political Orientation (left or right) or Seat Number (even

or odd). Nationality and political orientations are based on subjects' self-report, which is collected at the beginning of the experiment together with a few distraction questions (preferred pet, cat or dog; eating vegetarian or not; and biological sex, male or female). When making these choices, participants are aware that some of those attributes will be used later in the experiment.

*Inequality Generation*. The second dimension refers to the inequality-generating process, e.g. whether the initial income ranking is determined by effort, luck or phone value. Participants have 2.5 minutes to complete a real-effort task, the counting-zero task of Abeler et al. (2011) (see Supplementary Appendix). Here, subjects see a table consisting of 25 numbers that can take on a value of zero or one. Participants have to 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. The points earned in this task are also used in the main part (i.e. redistribution decisions) as one of the initial distributions and subjects are aware of this. In the Effort treatment, recipients received their own output in the initial distribution. In the Luck treatment, the output was randomly allocated to the five recipients. In the Phones treatment, the income rankings are such that the person with the most expensive phone gets the highest number of points, with a random mechanism to break ties. We use the estimated value of the smartphone[9] as a proxy for wealth to induce procedural unfairness, i.e. the person with the most expensive phone also has the most points in the initial distribution and people with the least expensive phone have the least points.[10]

*Initial Distribution*. In addition to the actual distribution situation (i.e. the points earned in the real-effort task), we add six premade fictitious situations (Bardsley 2000). Subjects knew that some situations do not correspond to the actual situation, but they neither knew in advance which ones were real and nor which one were paid out. These premade situations are designed to disentangle different motives for

[9] We created a dataset with about 600 entries of phones from producers that were popular in 2017 in Germany. For these phones, we collected current cheap offers as well as price on release 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: $Estimated\ Value = Price\ at\ release * (0.943)^{Age\ in\ quarters}$.

[10] Summary statistics of self-reports about origin and performance in the real-effort task are provided in Table 6 and 7 in Appendix A.

redistribution.[11] In these situations, social groups are sorted from rich to poor (or vice versa) such that the decision-maker's ingroup is either ex-ante rich or ex-ante poor in exactly three premade situations. We use distributions that are roughly linear inequality, distributions that includes one poor outlier, and distributions that includes one rich outlier. This enables us to compare the relative strength of compassion towards the poor and envy towards the rich as different motives for redistribution.

*Presentation of the information.* Before each decision, the decision-maker learns about the source of inequality (Effort, Luck or Phone treatment) and about what kind of social information will be displayed in the upcoming decision (German or non-German, left or right political orientation, even or odd seat number). On the decision screen, the decision-maker learns about the initial points assigned to each recipient and their social information. Recipients are sorted by their initial points (in ascending or descending order randomly determined by the computer). Figure 1 depicts a decision screen with an ascending sorting, i.e. the ex-ante poorest recipient is on the left and the ex-ante richest recipient is on the right.

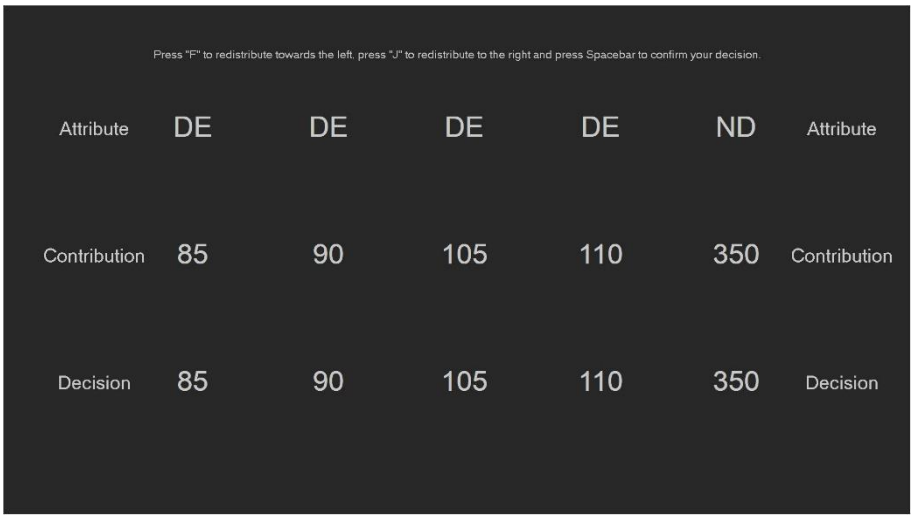



*Figure 1: Decision Screen. The header is a reminder of how to redistribute points. The first row shows the social information using abbreviations that were explained in the instructions (here, DE is for German while ND is for non-German). The second row shows information on the initial distribution (subjects learned before every 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.*

[11] A complete list of the premade items can be found in Table 5 in Appendix C.

**Redistribution Mechanism**

In every decision, the decision-maker sees the social information ("Attribute") and initial points of each group member ("Contribution"), and a final row indicates the number of points currently allocated to the respective recipient ("Decision"). At the onset of each trial, the second and the third row are equal, but the third row changes when the decision-maker presses the F or J button. Button-presses redistribute points from the visually right to left (F) or left to right (J), i.e. in the situation depicted in Figure 1, "F" from rich to poor and "J" 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 $P_i^r \Big/ \sum_{j=1}^{5} P_j^r$ of the total number of points earned. The parameter *r* changes with each button-press. There are ten steps in between status quo and equality and ten steps in both directions outside of this interval.[12] In all analysis and figures, we use the signed number of button-presses away from the status quo towards equality as our measure of redistribution. Figure 9 in Appendix B illustrates the mechanism in an example. Not pressing any button (r = 1) leaves the distribution unchanged and results in the status quo (as in Figure 1). Making 10 button-presses towards the initially poor (r = 0) 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 above). Decision-makers can also press more than ten times towards the poor (r < 0), inverting the rich-to-poor ranking up to a situation where the group member with the lowest contribution receives all points (+20 button-presses is "loser-takes-all"). Similarly, decision-makers can make button-presses towards the rich (r > 1), rewarding high contributions up to a distribution where the group member with the highest contribution receives all points (-10 button-presses is "winner-takes-all").

[12] 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.

**Procedures**

We conducted five sessions in November 2018 at the Lakelab in Constance, Germany. The experiment was programmed in z-Tree (Fischbacher 2007) and participants were recruited using ORSEE (Greiner 2015). In total, 60 subjects participated (mean age of 21 with 56.7% female). After the experiment, participants filled a questionnaire, including political orientation on an 11-point scale and Moral Foundations (MFQ30 variant). For a closer look into participants' political orientation, we added an 11-point Likert scale after the experiment.[13]

In the experiment, subjects make seven decisions for each combination of inequality treatment (Effort, Luck and Phones) and social treatment (Politics, Nationality and Seat Number), resulting in a total of 63 decisions. These 63 decisions are split into blocks of 21 by inequality treatment, while the order of decisions in the social treatments is randomized within these three blocks. The order of blocks and the order of decisions within blocks are randomized on the individual level to avoid order effects. Further, every subject acts as if she were the decision-maker (i.e. strategy method). At the end of the experiment, one person per group is selected to be the true decision-maker whose decisions determine the payoffs of the five recipients. These subjects receive 200 points themselves as the redistribution does not affect them. All other subjects receive the allocated points, with one point being worth 10 eurocents.

In addition to the behavioral analysis, we collect eye-tracking data. We use Tobii EyeX devices operating at 60 Hz, and we use chin rests to ensure roughly 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 inches in diameter and had a resolution of 1920x1080. The information on screen was organized such that they constituted non-overlapping areas of interest (AOI, see Orquin et al. (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.

[13] We find our student sample to be rather left-leaning, a graphical representation of political views in our sample is reported in Figure 8 in Appendix A.

**Hypotheses**

Our three treatment dimensions allow to identify several motives for redistribution in a unified framework. In this section, we develop the corresponding hypotheses. First, the ingroup information allows to identify ingroup preferences. We expect them to be an important motivation for redistribution. Since previous studies found only minor discrimination of different nationalities or ethnicities (Lane 2016), but strong discrimination of political opponents (Finkel et al. 2020; Fischbacher et al. 2020), we expect only moderate (if any) discrimination in the Nationality and Seat Number treatments, but strong discrimination in the Politics treatment. Further, if discrimination is driving redistribution decisions, we can expect redistribution that exceeds the corridor between status quo and equality, i.e. redistributions that make the ex-ante rich even richer or redistributions that make the ex-ante poor the new rich.

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

H1b: *This effect is strongest in the political group.*

In order to discriminate between groups, decision-makers have to look at the social group information. Thus, we expect decision-makers who focus longer on group information to discriminate more.

H1c: *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 least redistribution in the Effort treatment and most redistribution in the Phones treatment. In the latter treatment, it is natural to expect redistribution beyond equality, favoring the initially poor. The comparison of the Effort and Luck treatment has been investigated in several (see, e.g. Cappelen et al. (2013b) or Nettle and Saxe (2020)). Procedural unfairness has less been in the focus of the literature. Most closely related to our study is Durante et al. (2014) who find that the disinterested decision-maker chooses lower tax rates for the socio-economic background ordering (based upon zip-code) compared to a random order. Further, need-based fairness could motivate redistribution in this treatment (Cappelen et al. 2013b).

H2: *Redistribution is the largest in the Phones treatment, followed by the Luck treatment and smallest in the Effort treatment.*

Third, we explore whether redistribution behavior is driven more by compassion for the poor, which would be linked to the Harm and Fairness Foundations, or rather by envy towards the rich, which would be linked to the Fairness-foundation. 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, but either should be moderated by the Fairness foundation, while compassion also by the Harm foundation. For theses motives, an analysis of attention might be helpful because outliers are visually 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, which is moderated by the Fairness foundation. Sensitivity to poor outliers is additionally moderated by the Harm foundation.*

H3b: *Attention to the both the poorest and richest individual predicts redistribution.*

Fourth, stemming from the Moral Foundations Theory and general stereotypes, we hypothesize that overall left political views are associated with more equal distributions. Such inequality aversion could be motivated by compassion for the poor, envy towards the rich, or a general notion of fairness. These motives can be related to the Harm and Fairness Foundations that are endorsed stronger by politically left individuals. Our primary measure of inequality is the Gini coefficient.

H4a: *Political lefts choose more egalitarian distributions than political rights.*

H4b: *This effect is mediated by the fairness and/or harm foundation.*

Note, that all these hypotheses concern aggregate behavior. However, we will also classify decision-makers into groups based upon the individual redistribution behavior. This allows us to look at whether

there are distinct types among the decision-makers and to what degree either motive affects the redistribution behavior of the different types.

## 3 Results

The main results are shown in Figure 2. It displays cumulative distribution functions (CDF) of redistribution choices separated by nine within-subject treatments and with separate CDFs indicating whether the own group was initially poor or rich.[14] For example, in the top left figure (Politics and Effort treatment), nearly 50% of redistribution choices are in favor of the initially rich ingroup (blue CDF), while the income ranking was inversed in 64% of the cases if the ingroup was initially poor (red CDF). Across all decisions, 7.3% of initial distributions are left unchanged (status quo), while 26.5% of the final distributions are equal splits among all recipients.

**Result 1a & 1b:** *Decision-makers use redistribution to favor members of their social groups, especially in the Politics treatment. More extreme forms of redistribution are used frequently.*

In line with hypotheses H1a and H1b, we find that people favor their own group in all social treatments as the CDF when the ingroup is rich is always to the left of the CDF when the ingroup is poor. This effect is strongest when political orientation is displayed.

[14] Note that we use the variable "redistribution" as explained in the Methods, i.e. this variable ranges from -10 (winner-takes-it-all) to +20 (loser-takes-it-all), with intermediate values of 0 indicate (status quo) and +10 (perfect equality).

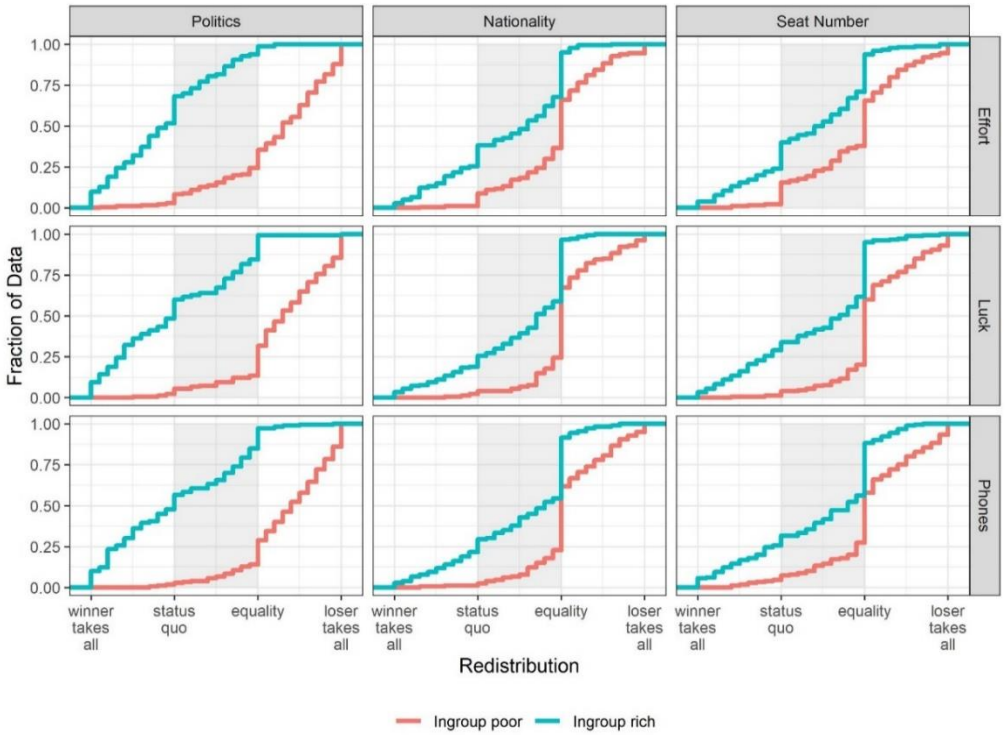



*Figure 2: Cumulative Distribution of Redistribution Choices. Each subgraph refers to a unique combination of social and inequality treatment. Colors indicate whether the ingroup was ex-ante rich or poor within each subgraph. The grey area indicates the corridor between status quo and equality*.

As can be seen in Figure 2, a remarkably high share of final distributions, more specifically 43%, lie outside the corridor between status quo and equality. Nearly all redistribution choices (92%) that go beyond inequality and status quo are favoring the ingroup, thereby making discrimination the best explanation of (extreme) redistribution and a strong motive for redistribution preferences in general. There are large differences between the social treatments: The effects are similar when Seat Number or Nationality is displayed. If the ingroup is rich, taking from the poor to give to the rich occurs in roughly 25%. In these treatments, this form of redistribution is very similar when the ingroup is poor, as nearly 25% of redistribution choices invert the rich-to-poor ranking. Most pronounced are the ingroup effects when Politics is displayed, as decision-makers increase inequality beyond the status quo in 49% of cases when their political ingroup is already rich, and invert the income ranking towards making the political ingroup rich instead of poor in 68% of cases. This pattern is confirmed by linear regressions of redistribution with a dummy variable for situations where the ingroup was ex-ante rich. The results are reported in Table 2. Note that in all our regression analyses, we cluster standard errors at the individual

level, and we restrict our analysis to the premade decisions since the real decisions are not comparable between subjects. This results in in 60 * 54 choices in 60 clusters.

**Table 2** Redistribution across social treatments

| | All | Politics | Nationality | Seat Number |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Ingroup is ex-ante rich | -8.411*** | -13.261*** | -5.824*** | -6.148*** |
| | *(0.833)* | *(1.140)* | *(0.949)* | *(1.013)* |
| Constant | 11.220*** | 12.965*** | 10.396*** | 10.300*** |
| | *(0.398)* | *(0.512)* | *(0.417)* | *(0.496)* |
| Observations | 3,240 | 1,080 | 1,080 | 1,080 |
| Adjusted $R^2$ | 0.305 | 0.525 | 0.208 | 0.192 |

*Note:* Regression results of linear regressions across the social treatments with clustered standard errors in parentheses. Redistribution takes on values between -10 (winner-takes-all) and +20 (loser-takes-all); * p < 0.05, ** p < 0.01, *** p < 0.001.

We observe strong ingroup-favoritism in all social treatments indicated by the negative coefficients ($p < 0.001$ in all treatments). The coefficient has the highest magnitude in the Politics treatment, being roughly twice as large compared to the other two social treatments. Further, the value of the constant shows that, on average, the redistribution goes beyond equality (+10) when the ingroup is ex-ante poor, inverting the initial income ranking. However, when the ingroup is ex-ante rich, inequality is only further increased in the Politics treatment (below 0), and redistributions are generally closer to status quo than equality. Thus, people make use of the possibility to redistribute in more extreme forms and frequently redistribute beyond status quo and equality.

**Result 1c:** *Attention to group information predicts discrimination.*

Given the prevalent group discrimination, we now investigate the attention on the different pieces of information using eye-tracking data. Here, we analyze the relationship between attention on the group information and discrimination. Attention is measured by the share of decision time spent looking at group information.[15] Importantly, discrimination is assessed as the difference of points given to the ingroup and to the outgroup, divided by the number of members of the ingroup and outgroup,

[15] Absolute time spent looking at information would bear the risk of a confound: 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.

respectively. As can be seen in Table 3, we find a positive relationship between relative attention to group information and discrimination.

**Table 3** 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)* |
| Observations | 3,234 | 1,078 | 1,079 | 1,077 |
| 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.;* p < 0.05, ** p < 0.01, *** p < 0.001.

**Result 2:** *Decision-makers react to procedural fairness by redistributing less if the initial income is earned via effort, but not to procedural unfairness.*

Hypothesis H2 suggests different levels of redistribution for the different inequality-generating process treatments. The corresponding analysis is reported in Table 4. We observe the lowest redistribution in the Effort treatment, i.e. in situations where initial income ranking was the result of individual productivity. The coefficient of the Effort treatment dummy is always negative ($p<0.05$ in all social treatments), indicating less redistribution towards 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 upon randomness. In contrast, the difference in redistribution between the Phones and Luck treatment is insignificant, although the direction matches the predicted (positive) direction in all treatments, which would indicate redistributing towards the ex-ante poor. Further, the constant (which represents the Luck treatment) suggests that redistributions are frequent and closer to equality than status quo.

We have shown that both ingroup preferences and the source of inequality affect redistribution. Compared to the impact of the ingroup bias, the differences between inequality treatments are rather

small (this becomes apparent when comparing magnitude of the coefficients and especially the $R^2$ between the models from Table 2 and Table 4).

**Table 4** Redistribution dependent on inequality treatments across social treatments

| | All | Politics | Nationality | Seat Number |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Effort treatment dummy | -1.184** | -0.972* | -1.181* | -1.400** |
| | *(0.367)* | *(0.450)* | *(0.450)* | *(0.464)* |
| Phones treatment dummy | 0.229 | 0.458 | 0.208 | 0.019 |
| | *(0.255)* | *(0.351)* | *(0.317)* | *(0.349)* |
| Constant | 7.333*** | 6.506*** | 7.808*** | 7.686*** |
| | *(0.253)* | *(0.334)* | *(0.288)* | *(0.325)* |
| Observations | 3,240 | 1,080 | 1,080 | 1,080 |
| Adjusted $R^2$ | 0.006 | 0.002 | 0.007 | 0.007 |

*Note:* Regression results of linear regressions with clustered standard errors in parentheses, predicting redistribution with inequality treatment dummies. The Luck treatment serves as a reference group.* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

**Result 3a:** *Participants redistribute more if there is a poor outlier in the initial distribution compared to when there is linear inequality or a rich outlier.*

Hypotheses 3a and 3b concern two competing but non-excluding motives for redistribution: Compassion for the poor and envy towards the rich. Figure 3 shows the average redistribution for initial distributions with a poor outlier, linear inequality or a rich outlier separated by the inequality-generating process. The situations with a poor outlier result in a higher redistribution than situations with linear inequality or a rich outlier.[16] This pattern is present across the three inequality-generating treatments, while Effort results in the least redistribution towards the poor. This redistribution towards the poor outlier of the outgroup is higher by roughly one button-press (from 3 to 4), which translates into 8 more points for the poor outgroup outlier at this level. Furthermore, Figure 3 again shows that the ingroup bias is a strong driver of redistribution as the ex-ante poor outlier of the ingroup ends up being richest. Taken together, our findings suggest that compassion for the poor is more important to our participants than envy

[16] Regression analyses across all social treatments reveals that scenarios with a poor outlier have a higher redistribution towards the poor than scenarios with linear inequality (p=0.015 for poor ingroup and p=0.003 for rich ingroup) and a rich outlier (p=0.071 for poor ingroup and p=0.021 for rich ingroup). Scenarios with linear inequality and a rich outlier do not seem to differ (smallest p=0.382).

towards the rich, as redistribution in situations with linear inequality is not different from situations with a rich outlier.

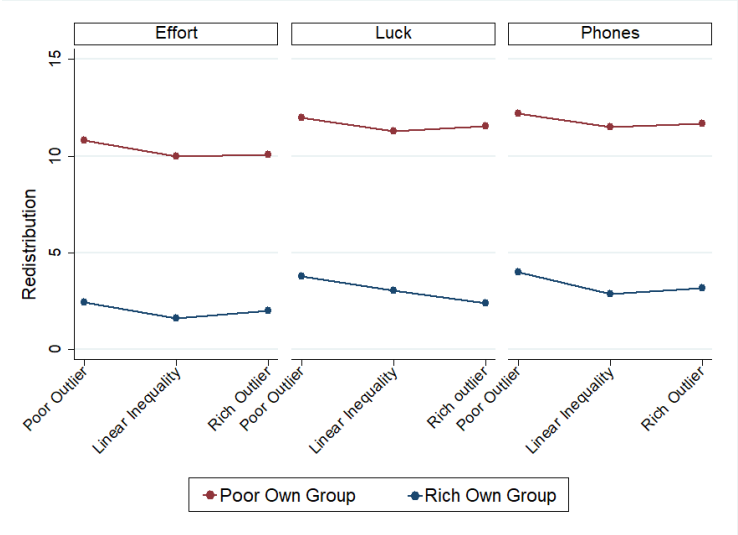



*Figure 3: Redistribution by decision situation (x-axis) separated by inequality-treatment. Redistribution is shown on the y-axis (Redistribution has values between -10 and +20, with 0 indicating status quo, values above +10 indicate redistribution inverting the income ranking).*

**Result 3b:** *Attention to the poorest predicts redistribution, but attention to the richest does not.*

We follow up on this result by investigating how attention to the poorest or richest recipients relates to the redistribution decision. Again, we use the share of total decision time looking at the respective information. Figure 4 shows redistribution and the time share spent on the ex-ante poorest/richest (left and right panel) and linear predictions for the relation between this attention share and redistribution choice.

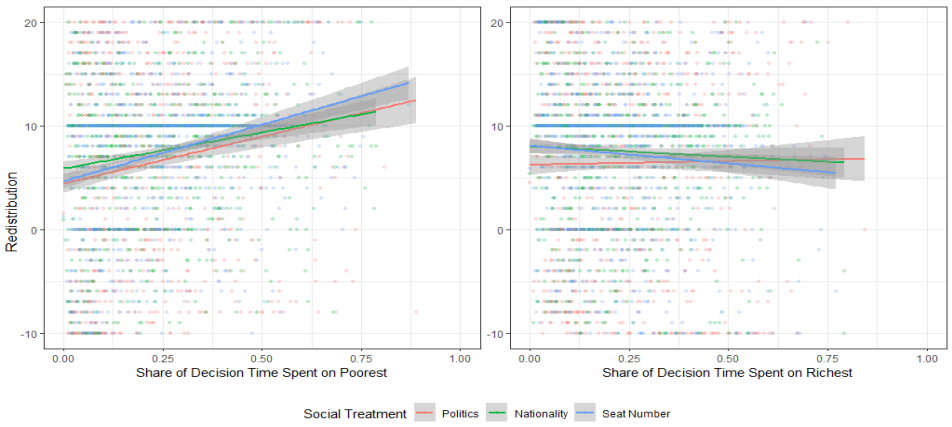



*Figure 4: Scatterplot showing redistribution and share of decision time spent on the ex-ante poorest (left) and richest (right) group member with added linear predictions and 95% confidence intervals. Colors reflect social treatment.*

We find higher redistributions when decision-makers pay relatively more attention to the poorest recipient, but not when they pay relative more attention to the richest recipient. These results are supported by linear regressions reported in Appendix D Table 9.

A possible concern could be that our manipulation of a rich outlier was not sufficiently strong to draw our participants' attention. A graphical representation of the attention to rich and poor recipients in the respective different situations can be found in Figure 5. The pattern of attention is strikingly similar for rich and poor outliers: In premade situations with a poor outlier, the poorest recipient receives roughly double (around 34%) the attention of the richest recipient (around 17%) and vice versa in premade situations with a rich outlier. Moreover, the poorest and the richest receive very similar amounts of attention in the linear inequality situations. Thus, despite paying much 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.

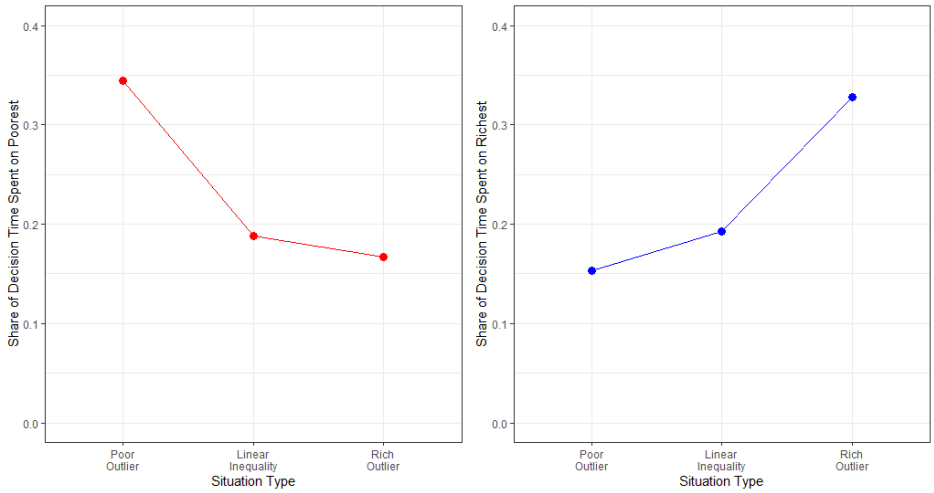



*Figure 5: Attention to the poorest (left) and richest (right) group member by situation type of our premade situations.*

**An integrative framework**

So far, we found that the ingroup preferences, the social domain of the ingroup, procedural fairness and the type of outlier of the initial distribution matter. To get an integrative view on the motives of redistribution, we use a regression approach (Table 5) with the different motives separately (Models 1-4), these motives in interaction with whether the ingroup is rich (Models 5-7), and a model including all motives (Model 8). Comparing Models 1-4 yields that the simple model of whether the ingroup is rich or not (Model 1) has the best explanatory power ($R^2$= 0.305), while the other motives have an $R^2$ below 0.1. When we interact whether the ingroup was rich with the different treatments (Models 5-7), we find that only the interaction between the social treatment and the ingroup being rich enhances the explanatory power to a larger degree. Thus, our full model (Model 8) includes this interaction as well as the other treatments. This model also shows that social information, inequality-generation, and the type of inequality are important motives for redistribution, while the ingroup discrimination is the strongest driver.

**Table 5** Motives of Redistribution

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 | Model 7 | Model 8 |
|---|---|---|---|---|---|---|---|---|
| OwnGroupRich | -8.411*** | | | | -5.824*** | -8.515*** | -8.398*** | -5.824*** |
| | 0.833 | | | | 0.950 | 0.904 | 0.808 | 0.950 |
| 1.SocialDummy = Seat | | -0.258 | | | -0.096 | | | -0.096 |
| | | 0.181 | | | 0.385 | | | 0.385 |
| 2.SocialDummy = Nation (base) | | base | | | base | | | base |
| | | . | | | . | | | . |
| 3.SocialDummy= Politics | | -1.150*** | | | 2.569*** | | | 2.569*** |
| | | 0.246 | | | 0.474 | | | 0.475 |
| 1.InequalDummy= Phones | | | 0.229 | | | 0.185 | | 0.229 |
| | | | 0.255 | | | 0.298 | | 0.255 |
| 2.InequalDummy= Luck (base) | | | base | | | base | | base |
| | | | . | | | . | | . |
| 3.InequalDummy= Effort | | | -1.184** | | | -1.296** | | -1.184** |
| | | | 0.367 | | | 0.444 | | 0.367 |
| 1.TypeInequal= RichOutlier | | | | 0.093 | | | 0.180 | 0.093 |
| | | | | 0.187 | | | 0.204 | 0.188 |
| 2.TypeInequal= Linear (base) | | | | base | | | base | base |
| | | | | . | | | . | . |
| 3.TypeInequal= PoorOutlier | | | | 0.810** | | | 0.743* | 0.810** |
| | | | | 0.253 | | | 0.298 | 0.254 |
| OwnGroupRich#Seat | | | | | -0.324 | | | -0.324 |
| | | | | | 0.883 | | | 0.884 |
| OwnGroupRich#Nation | | | | | base | | | base |
| | | | | | . | | | . |
| OwnGroupRich#Politics | | | | | -7.437*** | | | -7.437*** |
| | | | | | 1.14 | | | 1.14 |
| OwnGroupRich#Phones | | | | | | 0.087 | | |
| | | | | | | 0.541 | | |
| OwnGroupRich#Luck | | | | | | base | | |
| | | | | | | . | | |
| OwnGroupRich#Effort | | | | | | 0.224 | | |
| | | | | | | 0.567 | | |
| OwnGroupRich#RichOutlier | | | | | | | -0.174 | |
| | | | | | | | 0.331 | |
| OwnGroupRich#Linear | | | | | | | base | |
| | | | | | | | . | |
| OwnGroupRich#PoorOutlier | | | | | | | 0.135 | |
| | | | | | | | 0.289 | |
| constant | 11.220*** | 7.484*** | 7.333*** | 6.714*** | 10.396*** | 11.591*** | 10.913*** | 10.414*** |
| | 0.398 | 0.278 | 0.253 | 0.254 | 0.418 | 0.404 | 0.361 | 0.402 |
| N | 3240 | 3240 | 3240 | 3240 | 3240 | 3240 | 3240 | 3240 |
| R2 | 0.305 | 0.004 | 0.007 | 0.002 | 0.360 | 0.312 | 0.307 | 0.369 |

*Note:* Regression results of linear regressions with clustered standard errors in parentheses, predicting redistribution with different treatment dummies. The Luck treatment, linear inequality, and nationality treatment serve as a reference groups for the respective treatments.* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

**Result 4a:** *Political orientation does not predict redistribution.*

We employ linear regressions with political orientation as a predictor of the redistribution variable (+10 is equality), as well as the Gini coefficient (i.e. 0 is equality) of the final distribution (see Appendix D Table 10). The results do not support hypotheses H4a, i.e. more left oriented subjects do not choose significantly more egalitarian distributions. This is true for both the Gini coefficient and our redistribution measure. Since hypothesis H4a is not supported by our data, a mediation as suggested by hypothesis H4b is not feasible. However, the different Moral Foundations could still be valuable predictors of equality preferences.

**Result 4b:** *Moral Foundations do not predict redistribution behavior.*

We run linear regressions on both the Gini coefficient of the final distribution and redistribution variable using the five Moral Foundations (see Appendix D Table 11). None of the Moral Foundations can explain redistribution behavior. We find different endorsement patterns of the five Moral Foundations over the political spectrum in line with previous studies (for details on the endorsement, see Appendix E Figure 11 and Table 12), but neither political orientation nor Moral Foundation can explain redistribution.

**Classification of Redistribution Types**

We showed that ingroup preferences, the social domain of the ingroup, procedural fairness, and the type of outlier of the initial distribution matter. A graphical representation (Figure 10 in Appendix C) of all decisions for every subject shows heterogeneity in the decisions, which we will further explore. To this end, we employed the following regression, which corresponds to Model 8 in Table 5, for each decision-maker individually (see Appendix Figure 12 for estimates of the individual coefficients).

$$Redistribution = a + b * OwnGroupRich + c * SocialTreatment + d * (OwnGroupRich * SocialTreatment) + e * InequalityTreatment + f * TypeOfInequality + noise$$

Then, we used 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 3, 5, 6, 11 clusters as potential numbers of clusters. However, starting at 6 clusters, some clusters are rather small (n<=3). Of the remaining two classifications, we focus on the finer one and continue with the 5-cluster solution.[17] Figure 6 shows the level of redistribution for each cluster, separated by whether the own group was rich or not, the social treatment and the inequality treatment. All clusters consist of at least seven subjects, and we sorted clusters according to the number of subjects with cluster 1 being the largest with 22 subjects (see Appendix Figure 13 for the average coefficients per cluster).

[17] See Figures 14 & 15 which are similar to Figure 6 but using the 3- and 11-cluster solution. Tables 13 & 14 shows the respective contingency tables. Note that all solutions have one largest cluster with n>=16 where equality was rather important.

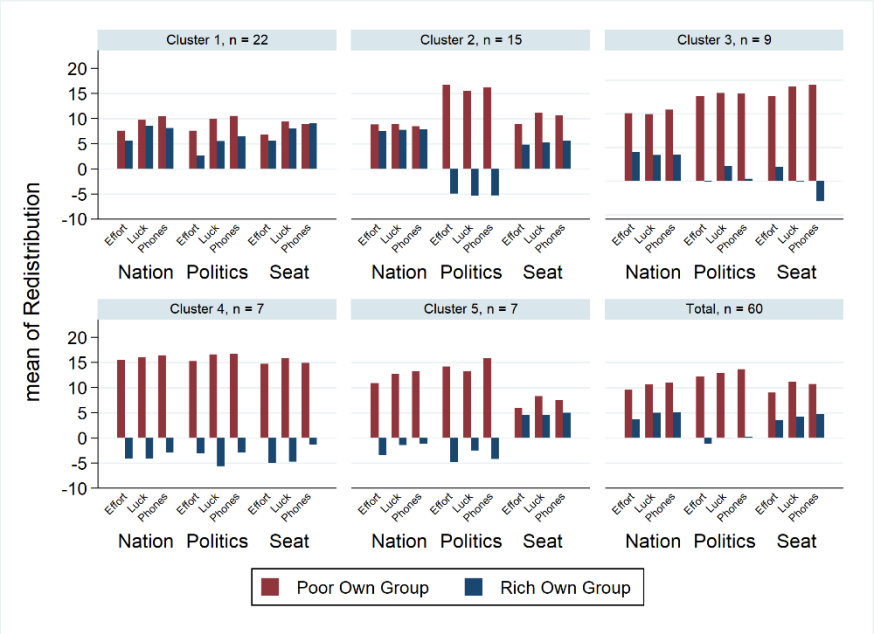



*Figure 6:Mean Redistribution for each cluster separated by whether the own social group was rich (red) or poor (red), the type of social information (Nation, Politics, Seat) and the inequality generation (Effort, Luck, Phones).*

The clusters vary substantially in their redistribution pattern: The largest cluster, cluster 1, includes most of the subjects with the highest amount of equal splits. This cluster also has a more distinct pattern when looking at the inequality generating process, i.e. effort-based earnings are less redistributed, while phone-value-based earnings lead to more redistribution for the owner of the cheaper phones. Cluster 2 redistributes by largely neglecting information about nationality but discriminates harshly against the other political orientation. Cluster 3 did not redistribute much in favor of the already rich and used more equal distribution when nationality was displayed. Cluster 4 makes extensive use of the redistribution technology and discriminates in favor of the own group irrespective of the social treatment (all mean redistributions are >14 or <0). Cluster 5 discriminates also in favor of the own group, but at a lesser extent, and does not discriminate largely when the seat number determined the social group.[18] The classification of decision-makers into different clusters allows a better insight into our findings. The different motives found to be important on the aggregate level also allow for a classification of very

[18] In order to test the robustness of the clusters and their motives, in Figure 16 in the Appendix we also separated the information presented in Figure 6 by whether there was a poor outlier, linear inequality or a rich outlier. The redistribution patterns are strikingly similar across these different decision situations.

distinct redistribution patterns: The largest cluster consists of people redistributing in an equalizing fashion, while the income ranks of the own group were very important for the other clusters, with the type of ingroup separating those clusters.

**Do these clusters differ in the attention on the poorest or richest person?**

We now investigate whether the identified clusters process information differently. More specifically, we focus on the attention towards the poorest and richest group member because this yielded different effects as shown in Results 3A and 3B. Figure 7 shows the share of attention on the poorest and richest group member separated by social information and whether the ingroup was poor or rich. Again, two clusters stand out: Cluster 4 has a very stable pattern across the social groups and adapts by whether the ingroup was poor or rich, i.e. if nation is displayed and the ingroup was poor, roughly 28 % of attention is on the poorest and 17 % on the richest, while these number nearly reverse when the ingroup is rich. Cluster 1 has a rather stable gaze pattern across the social groups and does not adapt much to whether the ingroup is rich or poor. Summarizing the whole figure, one can see that the share of time spent on the poorest is mostly higher if the ingroup is poor (and vice versa if the ingroup is rich). In line with the redistribution pattern, the political group information is often different than the two other social groups. This enriches the finding that redistribution is highest in Politics by showing that the ingroup outliers also received more attention.[19]

[19] We also explored clustering subjects into types based on different gaze measures. We find that the classification of subjects has no distinct relation to the behavior.

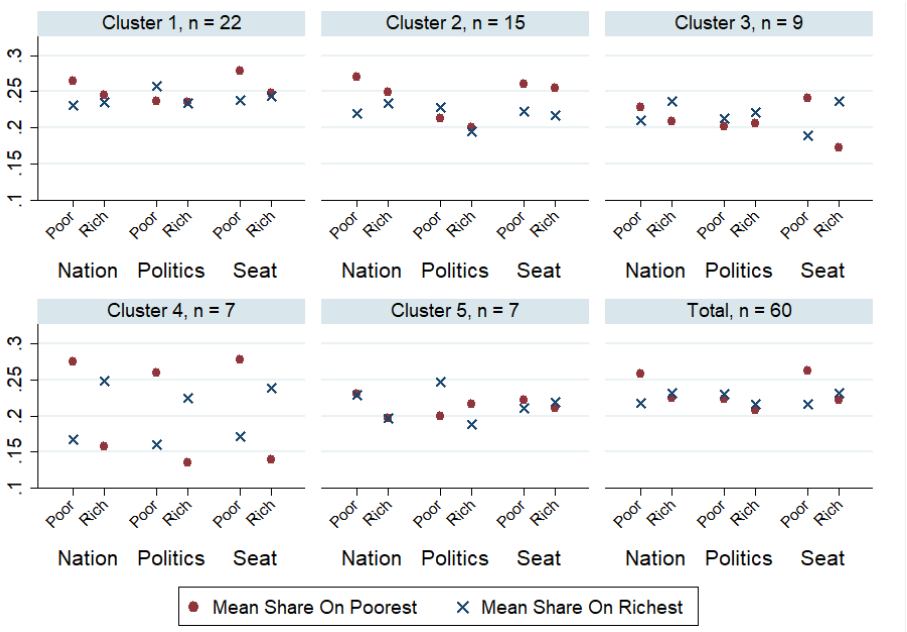



*Figure 7:Mean share of time spent on poorest (red circle) or richest person (blue x) across the social groups, separated by whether the ingroup was poor or rich.*

## 4 Conclusion

We investigate different motives for redistribution in a single framework. These motives include group discrimination with varying social groups (based on political orientation, nationality or random), different sources of initial income (earned, phone-value based or random) and different types of inequality (poor vs rich outliers). We extend redistribution beyond the usual boundaries of status quo and equality. We find that decision-makers use this extended mechanism in 43% of choices, almost exclusively to favor the own group. We find that the direction and level of redistribution is multidimensional, and we can summarize our results into 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 (92%) that go beyond inequality and status quo are favoring 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 of our social treatments but by far strongest when political orientation is displayed. The classification of types yields that most subjects belong to a cluster which displays a more extreme form of ingroup

favoritism for specific groups, while one cluster (cluster 4) simply favored the ingroup irrespective of the social domain of the ingroup.

*Fairness Matters:* We observe moderate effects for procedural fairness considerations: If the ex-ante distribution of points is the result of individual performance in a real-effort task, participants are more hesitant to redistribute compared to situations where the ex-ante allocation is the result of luck or the value of the recipient's smartphone. Using the value of the smartphone 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 itself seems to be an important benchmark for the final distribution as 26.5% are equal splits. Looking more closely at the individual data in Figure 10, we find that several decision-makers consistently choose an equal distribution (15 out of 60 decision-makers make an equal split in at least 50% of situations). A classification of decision-makers revealed that the largest behavioral cluster is the one where equality is particularly important. This group also redistributes less when the income rank is determined by effort and redistributes more when income rank is determined by phone value.

*Compassion over Envy*: We find evidence in the behavioral data that redistribution behavior is motivated by compassion for the poor, but not by envy towards the rich. This pattern shows up irrespective of how 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/richest receives less than 20% of the attention. Thus, both the ex-ante poor and rich outliers are well noticed, but only more attention to the poor is related to redistributing in their favor, further supporting the motive of compassion.

Our findings can be classified as loyalty related (ingroup bias dominates), fairness related (fairness matters) and harm related (compassion over envy) which are all in line with the Moral Foundations Theory. Therefore, we would have expected that the endorsements of the corresponding Moral Foundations are related to the redistribution behavior. However, Results 4a and 4b suggest that neither the political side nor the Moral Foundation can explain redistribution or the Gini coefficient.

The political orientation of the decision-maker was a strong potential candidate for explaining redistribution since 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 (i.e. left favoring redistribution more than right), we find no effect of political orientation on redistribution. The first possible explanation for the absence of an effect of political orientation is the lack of political diversity in our sample. As our sample only included a few (9) politically right decision-makers and no extremists on either side (4 subjects were at -4 on a scale from -5 to +5), we were unable to investigate effects relating to these subgroups. Another reason could be that economic aspects have become less important over time and the left-to-right scale now is more determined by 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. According to his analysis, economic issue preferences are stronger related to ideological differences within Lefts (i.e. between extreme-left and center-left) which is virtually the group that is best represented in our data. Thus, political orientation should be even more predictive in our sample.

Our results show that ingroup preferences can be a very important motive of redistribution; Redistribution is mainly driven by this motive in our experiment. This suggests that people are less willing to redistribute in heterogeneous (multi-ethnic or multi-cultural) societies (Alesina et al. 2018a; Finkel et al. 2020). However, we find little ingroup favoritism based on nationality and a high level of ingroup favoritism in the Political Orientation treatment. It seems that whether a social group affects redistribution depends on how it relates to identity (Shayo 2020; Charness and Chen 2020). Manipulating the relevance of social groups can be an effective measure to influence acceptance of and resistance to redistribution.

## References

Abeler, J., Falk, A., Goette, L., & Huffman, D. (2011). Reference points and effort provision. *American Economic Review, 101*(2), 470-492.

Alesina, A., Miano, A., & Stantcheva, S. (2018a). Immigration and redistribution. National Bureau of Economic Research.

Alesina, A., Miano, A., & Stantcheva, S. The polarization of reality. In *AEA Papers and Proceedings, 2020* (Vol. 110, pp. 324-328)

Alesina, A., & Stantcheva, S. Diversity, Immigration, and Redistribution. In *AEA Papers and Proceedings, 2020* (Vol. 110, pp. 329-334)

Alesina, A., Stantcheva, S., & Teso, E. (2018b). Intergenerational Mobility and Preferences for Redistribution. *American Economic Review, 108*(2), 521-554, doi:10.1257/aer.20162015.

Almås, I., Cappelen, A. W., Sørensen, E. Ø., & Tungodden, B. (2010). Fairness and the Development of Inequality Acceptance. *Science, 328*(5982), 1176-1178, doi:10.1126/science.1187300.

Almås, I., Cappelen, A. W., & Tungodden, B. (2020). Cutthroat capitalism versus cuddly socialism: Are Americans more meritocratic and efficiency-seeking than Scandinavians? *Journal of Political Economy, 128*(5), 1753-1788.

Bardsley, N. (2000). Control without deception: Individual behaviour in free-riding experiments revisited. *Experimental Economics, 3*(3), 215-240.

Bardsley, N. (2008). Dictator game giving: altruism or artefact? *Experimental Economics, 11*(2), 122-133.

Beetsma, R. M., Burgoon, B., Nicoli, F., De Ruijter, A., & Vandenbroucke, F. (2020). What kind of EU fiscal capacity? Evidence from a randomized survey experiment in five European countries in times of corona. *Evidence From a Randomized Survey Experiment in Five European Countries in Times of Corona (July 26, 2020). Amsterdam Centre for European Studies Research Paper*(2020/08).

Benabou, R., & Tirole, J. (2006). Belief in a just world and redistributive politics. *The Quarterly Journal of Economics, 121*(2), 699-746.

Berg, J., Dickhaut, J., & McCabe, K. (1995). Trust, reciprocity, and social history. *Games and Economic Behavior, 10*(1), 122-142.

Bursztyn, L., Callen, M., Ferman, B., Gulzar, S., Hasanain, A., & Yuchtman, N. (2019). Political Identity: Experimental Evidence on Anti-Americanism in Pakistan. *Journal of the European Economic Association*, doi:10.1093/jeea/jvz053.

Cappelen, A. W., Hole, A. D., Sørensen, E. Ø., & Tungodden, B. (2007). The Pluralism of Fairness Ideals: An Experimental Approach. *American Economic Review, 97*(3), 818-827, doi:10.1257/aer.97.3.818.

Cappelen, A. W., Konow, J., Sørensen, E. Ø., & Tungodden, B. (2013a). Just luck: An experimental study of risk-taking and fairness. *American Economic Review, 103*(4), 1398-1413.

Cappelen, A. W., Moene, K. O., Sørensen, E. Ø., & Tungodden, B. (2013b). Needs versus entitlements—an international fairness experiment. *Journal of the European Economic Association, 11*(3), 574-598.

Charness, G., & Chen, Y. (2020). Social Identity, Group Behavior, and Teams. *Annual Review of Economics, 12*(1), 691-713, doi:10.1146/annurev-economics-091619-032800.

Charness, G., & Rabin, M. (2002). Understanding social preferences with simple tests. *The Quarterly Journal of Economics, 117*(3), 817-869.

Chen, Y., & Li, S. X. (2009). Group Identity and Social Preferences. *American Economic Review, 99*(1), 431-457, doi:10.1257/aer.99.1.431.

Crosby, F. J., Iyer, A., & Sincharoen, S. (2006). Understanding Affirmative Action. *Annual Review of Psychology, 57*(1), 585-611, doi:10.1146/annurev.psych.57.102904.190029.

Durante, R., Putterman, L., & Van der Weele, J. (2014). Preferences for redistribution and perception of fairness: An experimental study. *Journal of the European Economic Association, 12*(4), 1059-1086.

Engel, C. (2011). Dictator games: a meta study. *Experimental Economics, 14*(4), 583-610, doi:10.1007/s10683-011-9283-7.

Engelmann, D., & Strobel, M. (2004). Inequality aversion, efficiency, and maximin preferences in simple distribution experiments. *American Economic Review, 94*(4), 857-869.

Esarey, J., Salmon, T., & Barrilleaux, C. (2011). Social Insurance and Income Redistribution in a Laboratory Experiment. *Political Research Quarterly, 65*(3), 685-698, doi:10.1177/1065912911411096.

Federico, C. M., & Sidanius, J. (2002). Racism, ideology, and affirmative action revisited: The antecedents and consequences of "principled objections" to affirmative action. *Journal of Personality and Social Psychology, 82*(4), 488-502, doi:10.1037/0022-3514.82.4.488.

Fehr, E., & Schmidt, K. M. (1999). A Theory of Fairness, Competition, and Cooperation. *The Quarterly Journal of Economics, 114*(3), 817-868, doi:10.1162/003355399556151.

Fehrler, S., & Kosfeld, M. (2013). Can you trust the good guys? Trust within and between groups with different missions. *Economics Letters, 121*(3), 400-404, doi:10.1016/j.econlet.2013.09.007.

Finkel, E. J., Bail, C. A., Cikara, M., Ditto, P. H., Iyengar, S., Klar, S., et al. (2020). Political sectarianism in America. *Science, 370*(6516), 533-536.

Fischbacher, U. (2007). z-Tree: Zurich toolbox for ready-made economic experiments. *Experimental Economics, 10*(2), 171-178.

Fischbacher, U., Grammling, D., & Schmelz, K. (2020). *Group-Specific Discrimination- The Role of Moral Foundations*. PhD Thesis: Heterogeneity of Social Norms, University of Konstanz,

Forsythe, R., Horowitz, J. L., Savin, N. E., & Sefton, M. (1994). Fairness in simple bargaining experiments. *Games and Economic Behavior, 6*(3), 347-369.

Gächter, S., & Riedl, A. (2006). Dividing Justly in Bargaining Problems with Claims. *Social Choice and Welfare, 27*(3), 571-594, doi:10.1007/s00355-006-0141-z.

Gibaldi, A., Vanegas, M., Bex, P. J., & Maiello, G. (2017). Evaluation of the Tobii EyeX Eye tracking controller and Matlab toolkit for research. *Behavior Research Methods, 49*(3), 923-946.

Graham, J., Haidt, J., & Nosek, B. A. (2009). Liberals and conservatives rely on different sets of moral foundations. *Journal of Personality and Social Psychology, 96*(5), 1029-1046, doi:10.1037/a0015141.

Graham, J., Nosek, B. A., Haidt, J., Iyer, R., Koleva, S., & Ditto, P. H. (2011). Mapping the moral domain. *Journal of Personality and Social Psychology, 101*(2), 366-385, doi:10.1037/a0021847.

Greiner, B. (2015). Subject pool recruitment procedures: organizing experiments with ORSEE. [journal article]. *Journal of the Economic Science Association, 1*(1), 114-125, doi:10.1007/s40881-015-0004-4.

Güth, W., & Kocher, M. G. (2014). More than thirty years of ultimatum bargaining experiments: Motives, variations, and a survey of the recent literature. *Journal of Economic Behavior & Organization, 108*, 396-409, doi:10.1016/j.jebo.2014.06.006.

Güth, W., Schmittberger, R., & Schwarze, B. (1982). An experimental analysis of ultimatum bargaining. *Journal of Economic Behavior & Organization, 3*(4), 367-388.

Hahsler, M., Piekenbrock, M., Arya, S., & Mount, D. (2017). dbscan: Density Based Clustering of Applications with Noise (DBSCAN) and related algorithms. *R package version*, 1.0-0.

Haidt, J. (2007). The New Synthesis in Moral Psychology. *Science, 316*(5827), 998-1002, doi:10.1126/science.1137651.

Haidt, J., & Graham, J. (2007). When Morality Opposes Justice: Conservatives Have Moral Intuitions that Liberals may not Recognize. *Social Justice Research, 20*(1), 98-116, doi:10.1007/s11211-007-0034-z.

Haidt, J., & Joseph, C. (2004). Intuitive ethics: how innately prepared intuitions generate culturally variable virtues. *Daedalus, 133*(4), 55-66, doi:10.1162/0011526042365555.

Heusi, F. (2006). *Einsatz, Glück und Gerechtigkeit: Fairnessvorstellungen in einem Umverteilungsexperiment*. Diploma Thesis,

Iyengar, S., & Westwood, S. J. (2014). Fear and Loathing across Party Lines: New Evidence on Group Polarization. *American Journal of Political Science, 59*(3), 690-707, doi:10.1111/ajps.12152.
Jiang, T., Potters, J., & Funaki, Y. (2016). Eye-tracking Social Preferences. *Journal of Behavioral Decision Making, 29*(2-3), 157-168, doi:10.1002/bdm.1899.
Johnson, N. D., & Mislin, A. A. (2011). Trust games: A meta-analysis. *Journal of Economic Psychology, 32*(5), 865-889, doi:10.1016/j.joep.2011.05.007.
Jost, J. T., Glaser, J., Kruglanski, A. W., & Sulloway, F. J. (2003). Political conservatism as motivated social cognition. *Psychological Bulletin, 129*(3), 339-375, doi:10.1037/0033-2909.129.3.339.
Kemp, S., & Bolle, F. (2013). Are egalitarian preferences based on envy? *The Journal of Socio-Economics, 45*, 57-63, doi:10.1016/j.socec.2013.04.006.
Klor, E. F., & Shayo, M. (2010). Social identity and preferences over redistribution. *Journal of Public Economics, 94*(3-4), 269-278, doi:10.1016/j.jpubeco.2009.12.003.
Kogut, T. (2011). Someone to blame: When identifying a victim decreases helping. *Journal of Experimental Social Psychology, 47*(4), 748-755.
Konow, J. (2000). Fair Shares: Accountability and Cognitive Dissonance in Allocation Decisions. *American Economic Review, 90*(4), 1072-1091, doi:10.1257/aer.90.4.1072.
Konow, J. (2003). Which Is the Fairest One of All? A Positive Analysis of Justice Theories. *Journal of Economic Literature, 41*(4), 1188-1239, doi:10.1257/002205103771800013.
Konow, J. (2009). Is fairness in the eye of the beholder? An impartial spectator analysis of justice. *Social Choice and Welfare, 33*(1), 101-127.
Krawczyk, M. (2010). A glimpse through the veil of ignorance: Equality of opportunity and support for redistribution. *Journal of Public Economics, 94*(1-2), 131-141.
Lachat, R. (2017). Which way from left to right? On the relation between voters' issue preferences and left–right orientation in West European democracies. *International Political Science Review, 39*(4), 419-435, doi:10.1177/0192512117692644.
Lane, T. (2016). Discrimination in the laboratory: A meta-analysis of economics experiments. *European Economic Review, 90*, 375-402, doi:10.1016/j.euroecorev.2015.11.011.
List, J. A. (2007). On the interpretation of giving in dictator games. *Journal of Political Economy, 115*(3), 482-493.
Nettle, D., & Saxe, R. (2020). Preferences for redistribution are sensitive to perceived luck, social homogeneity, war and scarcity. *Cognition, 198*, 104234.
Orquin, J. L., Ashby, N. J. S., & Clarke, A. D. F. (2016). Areas of Interest as a Signal Detection Problem in Behavioral Eye-Tracking Research. *Journal of Behavioral Decision Making, 29*(2-3), 103-115, doi:10.1002/bdm.1867.
Piketty, T. (1995). Social mobility and redistributive politics. *The Quarterly Journal of Economics, 110*(3), 551-584.
Piketty, T. (2014). Capital in the 21st Century.
Polonio, L., Di Guida, S., & Coricelli, G. (2015). Strategic sophistication and attention in games: An eye-tracking study. *Games and Economic Behavior, 94*, 80-96.
Rahal, R.-M., Fiedler, S., & De Dreu, C. K. W. (2020). Prosocial Preferences Condition Decision Effort and Ingroup Biased Generosity in Intergroup Decision-Making. *Scientific Reports, 10*(1), 10132, doi:10.1038/s41598-020-64592-2.
Rodon, T., & Sanjaume-Calvet, M. (2020). How fair is it? An experimental study of perceived fairness of distributive policies. *The Journal of Politics, 82*(1), 000-000.
Shayo, M. (2009). A Model of Social Identity with an Application to Political Economy: Nation, Class, and Redistribution. *American Political Science Review, 103*(2), 147-174, doi:10.1017/s0003055409090194.
Shayo, M. (2020). Social identity and economic policy. *Annual Review of Economics*.
Sznycer, D., Lopez Seal, M. F., Sell, A., Lim, J., Porat, R., Shalvi, S., et al. (2017). Support for redistribution is shaped by compassion, envy, and self-interest, but not a taste for fairness. *Proceedings of the National Academy of Sciences, 114*(31), 8420-8425, doi:10.1073/pnas.1703801114.

Tajfel, H., Turner, J. C., Austin, W. G., & Worchel, S. (1979). An integrative theory of intergroup conflict. *Organizational identity: A reader, 56*, 65.

Tyran, J.-R., & Sausgruber, R. (2006). A little fairness may induce a lot of redistribution in democracy. *European Economic Review, 50*(2), 469-485, doi:10.1016/j.euroecorev.2004.09.014.

Wetherell, G. A., Brandt, M. J., & Reyna, C. (2013). Discrimination Across the Ideological Divide. *Social Psychological and Personality Science, 4*(6), 658-667, doi:10.1177/1948550613476096.

# 5 Appendix

## Appendix A: Sample Characteristics

**Table 6** Reports of Origin and Citizenship

| Citizenship | Germany | Other | Total |
|---|---|---|---|
| Germany | 55 | 2 | 57 |
| Switzerland | 0 | 1 | 1 |
| Montenegro | 1 | 0 | 1 |
| France | 0 | 1 | 1 |
| Total | 56 | 4 | 60 |

**Table 7** Summary Statistics

| Binary Social Info | Mean | SD |
|---|---|---|
| German origin | 0.93 | 0.25 |
| Vegetarian | 0.28 | 0.45 |
| Prefer dog over cat | 0.63 | 0.49 |
| Seat number odd | 0.5 | 0.5 |
| Estimated phone value (€) | 351.41 | 188.15 |
| Performance in real-effort | 115.1 | 33.24 |

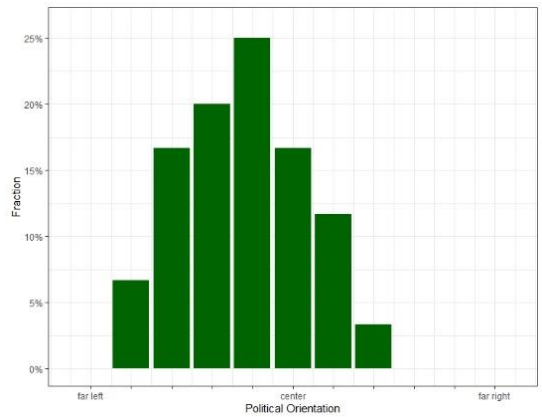



*Figure 8: Distribution of political orientation across our sample.*

**Appendix B: Details on the Redistribution Technology and Premade Decisions**

Figure 9 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, 250.

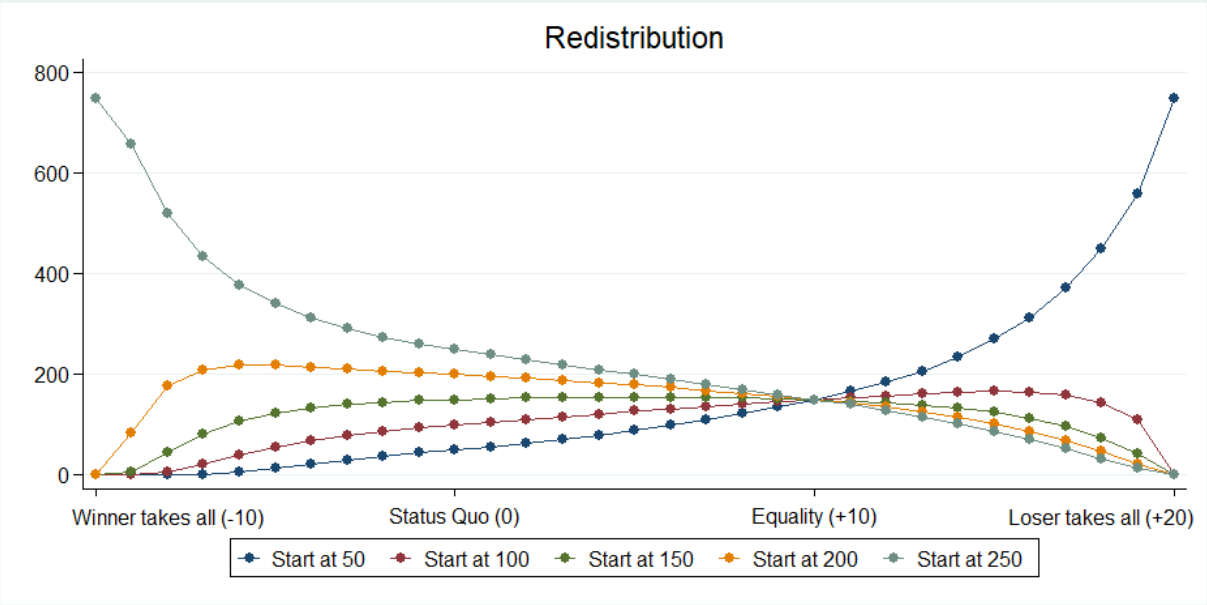



*Figure 9: Set of possible allocations using the redistribution mechanism.*

Table 8 depicts the parameters of all premade decisions. There is only one group information displayed at a time, depending on the social treatment of the respective decision.

**Table 8** Premade decisions used in the experiment

| Situation ID | Contributions | Origin | Politics | Seat Number |
|---|---|---|---|---|
| 1 | 50, 90, 155, 215, 240 | nd, nd, nd, de, de | r, r, r, l, l | ug, ug, ug, ge, ge |
| 2 | 90, 100, 100, 120, 340 | nd, nd, nd, nd, de | r, r, r, r, l | ug, ug, ug, ug, ge |
| 3 | 25, 140, 145, 165, 180 | de, nd, nd, nd, nd | l, r, r, r, r | ge, ug, ug, ug, ug |
| 4 | 55, 95, 150, 190, 260 | de, de, de, nd, nd | l, l, l, r, r | ge, ge, ge, ug, ug |
| 5 | 85, 90, 105, 110, 350 | de, de, de, de, nd | l, l, l, l, r | ge, ge, ge, ge, ug |
| 6 | 40, 150, 155, 155, 180 | nd, de, de, de, de | r, l, l, l, l | ug, ge, ge, ge, ge |
| 7 | actual data | actual data | actual data | actual data |

## Appendix C: Individual Raw Data


*Figure 10: Comprehensive graphs of all decisions in premade decision situations (by subject), displaying redistribution choice. Decisions are sorted by inequality treatment (Effort, Luck, Phones) and decision number within the respective treatment. Color indicates the social treatment and solid points indicate situations where the ingroup of the decision-maker was ex-ante poor.*

## Appendix D: Further Regression results

**Table 9** Discrimination and attention to group members (Hypothesis 3b)

| | Redistribution | |
|---|---|---|
| Share of decision time spent on poorest recipient | 8.747*** | |
| | *(1.681)* | |
| Share of decision time spent on richest recipient | | -0.857 |
| | | *(1.606)* |
| Constant | 4.988*** | 7.218*** |
| | *(0.395)* | *(0.395)* |
| Observations | 3,234 | 3,234 |
| Adjusted $R^2$ | 0.038 | 0.00001 |

*Note:* Linear Regression to test H3b . * p < 0.05, ** p < 0.01, *** p < 0.001, standard errors clustered at subject level

**Table 10** Gini Coefficient & redistribution and own political orientation

| | Gini coefficient | Redistribution |
|---|---|---|
| | (1) | (2) |
| Own Political orientation | -0.006 | -0.113 |
| (-5=far left; +5=far right) | *(0.015)* | *(0.160)* |
| Constant | 0.239*** | 6.876*** |
| | *(0.027)* | *(0.366)* |
| Observations | 3,240 | 3,240 |
| Adjusted $R^2$ | 0.001 | 0.0002 |

*Note:* Linear Regression to test hypothesis H4a. * p < 0.05, ** p < 0.01, *** p < 0.001, standard errors clustered at subject level.

**Table 11** Gini Coefficient & redistribution and moral foundations

| | Gini Coefficient | Redistribution |
|---|---|---|
| | (1) | (2) |
| Harm Foundation | -0.032 | -0.023 |
| | *(0.025)* | *(0.310)* |
| Fairness Foundation | -0.043 | 0.497 |
| | *(0.033)* | *(0.388)* |
| Ingroup Foundation | -0.018 | 0.297 |
| | *(0.037)* | *(0.421)* |
| Authority Foundation | -0.001 | -0.155 |
| | *(0.031)* | *(0.484)* |
| Purity Foundation | 0.052 | -0.167 |
| | *(0.034)* | *(0.333)* |
| Constant | 0.490** | 4.957* |
| | *(0.172)* | *(2.437)* |
| Observations | 3,240 | 3,240 |
| Adjusted $R^2$ | 0.031 | 0.001 |

*Note:* Linear Regression to test hypothesis H4n. * p < 0.05, ** p < 0.01, *** p < 0.001, standard errors clustered at subject level.

**Appendix E: Moral Foundations**

Overview of moral foundations over the political spectrum. When running regressions, political orientation does affect each foundation as predicted, but only significantly so in the cases of fairness and ingroup.

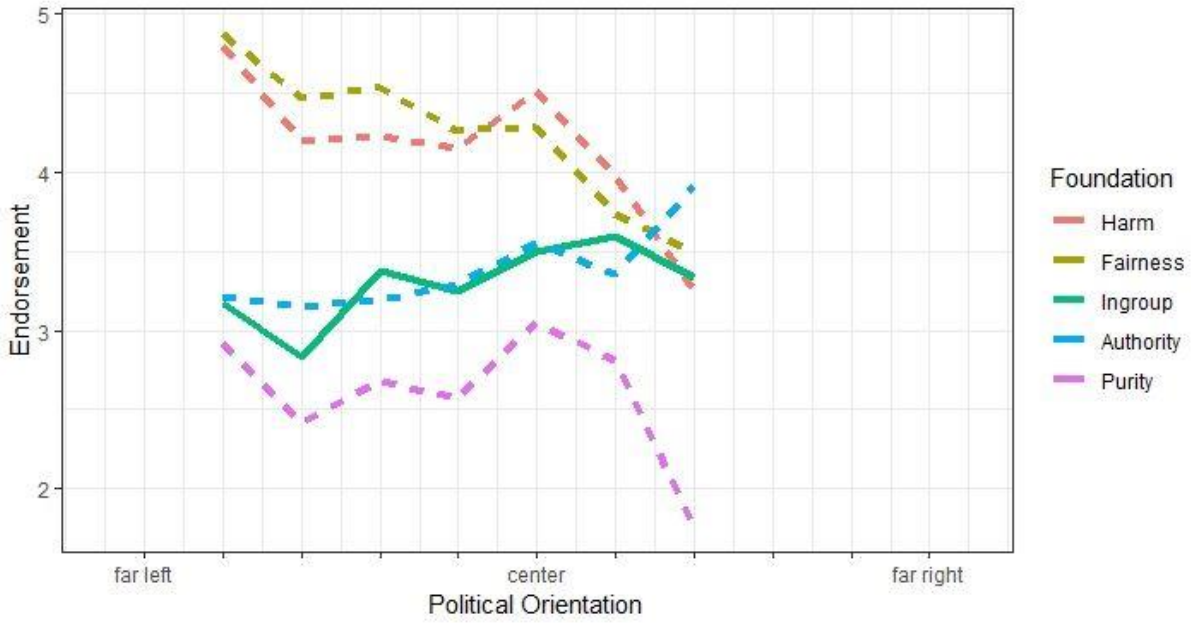



*Figure 11: Political orientation and the five Moral Foundations.*

**Table 12** Political orientation and moral foundations

| | Harm | Fairness | Ingroup | Authority | Purity |
|---|---|---|---|---|---|
| Political Orientation | -0.090 | -0.183*** | 0.115* | 0.089 | 0.016 |
| | *(0.067)* | *(0.051)* | *(0.051)* | *(0.055)* | *(0.071)* |
| Constant | 4.117*** | 4.080*** | 3.425*** | 3.424*** | 2.689*** |
| | *(0.131)* | *(0.100)* | *(0.100)* | *(0.108)* | *(0.139)* |
| Observations | 60 | 60 | 60 | 60 | 60 |

*Note:* Linear Regressions with one decision per subject. * p < 0.05, ** p < 0.01, *** p < 0.001

## Appendix F: Cluster Analysis of Redistribution Behavior

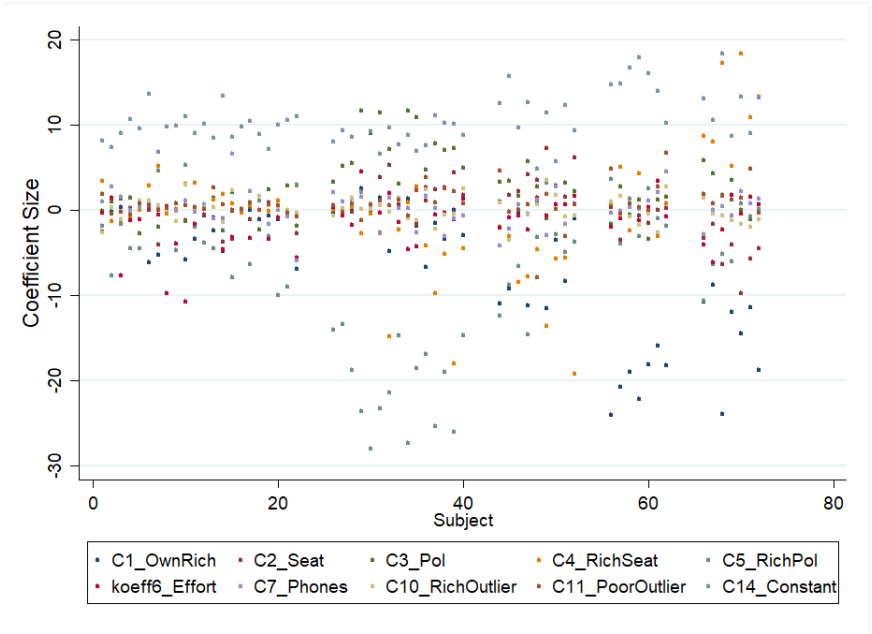



*Figure 12: Coefficients from the individual regressions using the model stated in the Classification section. Each x-tick is one subject with spaces between the different clusters for visibility: Cluster 1 (1-22), Cluster 2 (26-40), Cluster 3 (44-52), Cluster 4 (56-62), Cluster 5 (66-72).*

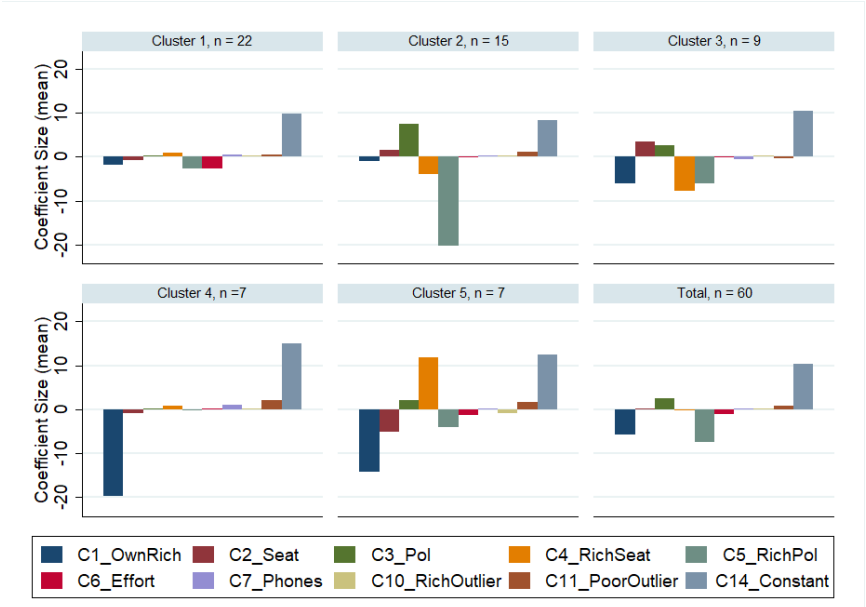



*Figure 13: Averages of the individual regression coefficients for each cluster using the model stated in the Classification section.*

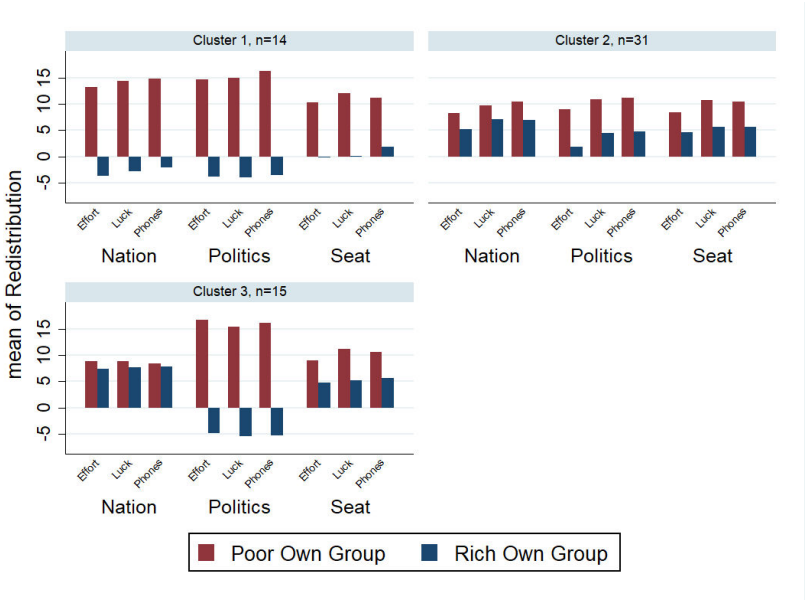



*Figure 14: Mean Redistribution for each of the three clusters separated by whether the own social group was rich (red) or poor (red), the type of social information (Nation, Politics, Seat) and the inequality generation (Effort, Luck, Phones).*

**Table 13** Contingency table 3- and 5-cluster solution

| WARD_cluster3 | new_cluster5 | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Total |
| 1 | 0 | 0 | 0 | 7 | 7 | 14 |
| 2 | 22 | 0 | 9 | 0 | 0 | 31 |
| 3 | 0 | 15 | 0 | 0 | 0 | 15 |
| Total | 22 | 15 | 9 | 7 | 7 | 60 |


*Figure 15: Mean Redistribution for each of the eleven clusters separated by whether the own social group was rich (red) or poor (red), the type of social information (Nation, Politics, Seat) and the inequality generation (Effort, Luck, Phones).*

**Table 14** Contingency table 11- and 5-cluster solution

| WARD_cluster11 | new_cluster5 | | | | | |
|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | Total |
| 1 | 0 | 0 | 0 | 7 | 0 | 7 |
| 2 | 0 | 0 | 0 | 0 | 4 | 4 |
| 3 | 0 | 0 | 0 | 0 | 3 | 3 |
| 4 | 0 | 0 | 4 | 0 | 0 | 4 |
| 5 | 0 | 0 | 3 | 0 | 0 | 3 |
| 6 | 0 | 0 | 2 | 0 | 0 | 2 |
| 7 | 16 | 0 | 0 | 0 | 0 | 16 |
| 8 | 6 | 0 | 0 | 0 | 0 | 6 |
| 9 | 0 | 7 | 0 | 0 | 0 | 7 |
| 10 | 0 | 5 | 0 | 0 | 0 | 5 |
| 11 | 0 | 3 | 0 | 0 | 0 | 3 |
| Total | 22 | 15 | 9 | 7 | 7 | 60 |


*Figure 16: Mean Redistribution for each of the five clusters (rows) and the type of situation (columns, i.e. poor outlier, linear inequality, rich outlier) separated by whether the own social group was rich (red) or poor (red), the type of social information (Nation, Politics, Seat) and the inequality generation (Effort, Luck, Phones).*

## 6 Supplementary Information

# Instructions

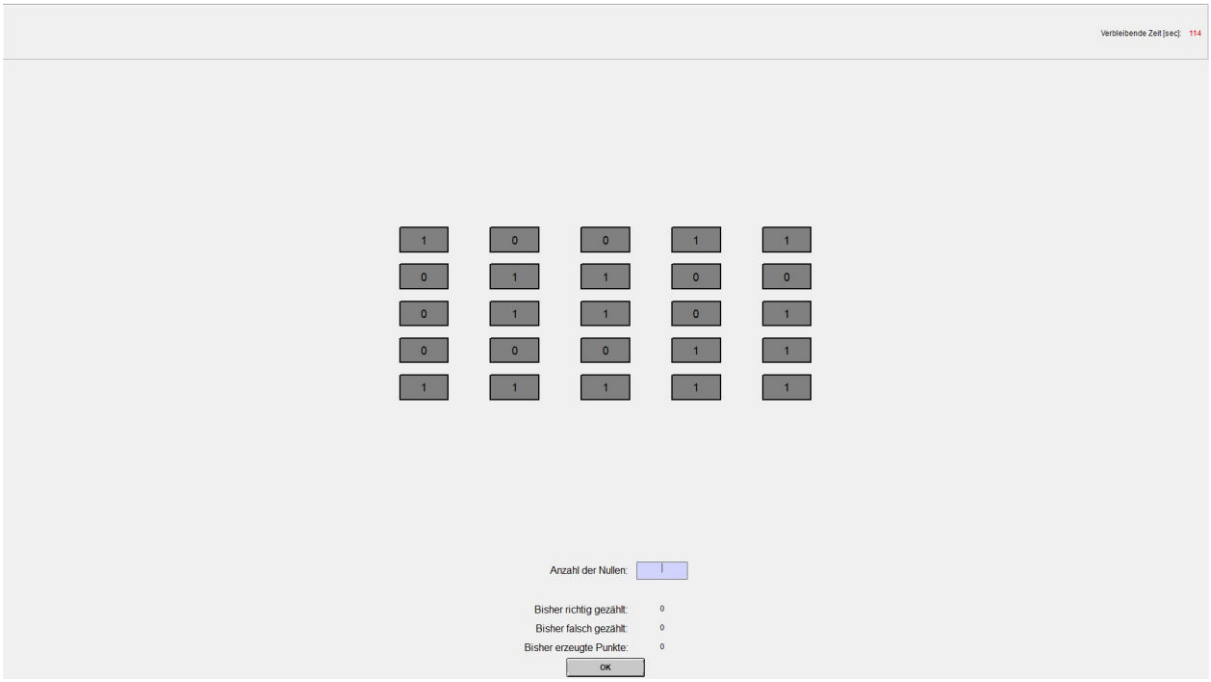
Thank you very much for your participation!

Please read these explanations carefully. Your decisions in this experiment will affect your payout and the payout of the other participants, as well as the decisions of the other participants will affect your payout.

Today's experiment consists of three parts.

**In the first part, we ask you for some attributes.** Some of these attributes will be shown to other participants later on, but only one at a time, so no profiles can be created. Thus, neither you nor other participants will be able to draw conclusions about the identity of participants. In this experiment, we ask you to place your smartphone on your table. This is one of the attributes we ask for in the first part, so we don't want the person sitting next to you to see it. We will then come to your seat and check your information using a picture. If you are unsure which variant of the smartphone you have with you is correct, please give us your best estimate. If your smartphone is not included in our database or if you do not own a smartphone, please give us a hand signal.

**In the second part, you solve counting tasks.** In a table full of ones and zeros you have to find out and enter the number of **zeros**. The following figure displays the screen.




In the middle of the screen is a table with ones and zeros. Please count the zeros, enter the result in the field provided and confirm with "OK". You will immediately receive a confirmation as to whether you have solved the counting task correctly or incorrectly. The next table will then be displayed. You generate 10 points for each correctly solved counting task. However, 5 points are lost for each incorrectly solved counting task! In total, you have 2.5 minutes (150 seconds) to generate points. The remaining time is displayed in the upper right corner. **The points created in this part will be redistributed in the third part of the experiment.**

In the third part, we will record your eye movements. Before the third part begins, the hardware will be calibrated first. Please follow the instructions on your screen. If you have any questions or if something does not work during the calibration, please give us a hand signal.

**The third part consists of three blocks with 21 distribution decisions each.** For these decisions, you will be grouped with 5 other participants. Your task is to distribute the points generated by the 5 other participants. You can only change the points of the 5 other participants, but not your own.

During your decisions you will see three pieces of information:

**Above:** An attribute of the respective group member. Here we use the following abbreviations:

- „KA“ for a person, that prefers cats over dogs
- „HU“ for a person, that prefers dogs over cats
- „DE“ for a person, that was born in Germany
- „ND“ for a person, that was not born in Germany
- „VE“ for a person, that avoids meat consumption
- „NV“ for a person, that does not avoid meat consumption

- „W“ for a female person
- „M“ for a male person
- „L“ for a person, that assigns themselves to the politically left camp
- „R“ for a person, that assigns themselves to the politically right camp
- „U“ for a person, sitting at a seat with an odd number
- „G“ for a person, sitting at a seat with an even number

**Middle:** The *contribution* of the respective group member. The contribution corresponds to the points that the respective person "brings along". The persons are sorted according to their contributions so that the person with the lowest contribution is at one end of the distribution and the person with the highest contribution is at the other end. For each decision screen, the computer randomly determines whether to sort in ascending or descending order.

As already mentioned, you make these decisions in three blocks, the order of the blocks is determined by chance. **The difference between the blocks is in the contributions:**

- Block **"Generated points"**: In this block, the contributions from which the start distribution is generated come from the points created in the second part (counting tasks). Thus, the person who created the most points in part 2 also receives the highest contribution.
- Block **"Random"**: In this block, the generated points are randomly redistributed within a group. Thus, all participants have the same chance to get the highest or lowest contribution.
- Block **"Value of the smartphone"**: In this block, the generated points are also redistributed in the group, however, not randomly, but according to an estimate of the current new value of the smartphone. The person with the most expensive smartphone receives the highest contribution and the person with the cheapest smartphone receives the lowest contribution.

At the beginning of each block, the computer informs you about the origin of the contributions. In addition, a reminder appears before each decision.

**Below:** Your decision. You can change the distribution of the points with the F and J keys. For the start distribution, we use the distribution in which each person receives exactly his or her contribution. However, this has no binding effect on your decision. You can redistribute at will; the limits of the redistribution are only created by the fact that at some point (almost) all points end up with one person.

You make your decision by redistributing with the F and J keys until you are satisfied with the resulting distribution. Then confirm your decision with the space bar. Once you have pressed the space bar, you cannot return to the previous decision. To prevent accidentally skipping a screen if you press the space bar more than once, it will take 2 seconds to re-enter.

The following figure shows an example of the decision screen in the third part.


In addition, we have added some ready-made distribution decisions where you only distribute between hypothetical participants.

All participants make these decisions for their 5 group members. At the end of the experiment, one person in each group will be drawn for the payout, whose decisions can be implemented. One of the non-hypothetical decisions of these persons is then randomly drawn for payment. The person whose decision is implemented receives a lump sum of 200 points. The other members of the group receive the points that were allocated to them in the implemented decision.

At the end of the experiment, the points are converted into euros. The conversion rate is:

**10 Points ≙ 1 Euro** or **1 Point ≙ 10 Cent**

In addition, you will receive a lump sum of 5 euros for your punctual appearance and as a remuneration for the questionnaire at the end.

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