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WORKING PAPER

No. 23/05

February 2023

University of Antwerp
Herman Deleeck Centre for Social Policy
https://www.uantwerpen.be/en/research-groups/csb/

Social preferences and information about effort and luck: an online survey experiment

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Working Paper No. 23/05

February 2023

Abstract

We propose an easily implemented method to compare the level of altruism of non-parametric social preferences over one's own and another person's monetary pay-off. The method was used in an online survey experiment with 573 decision makers to compare the level of altruism of their social preferences and study how much it is affected by randomized information about the effort and luck level of the other person. We find evidence supporting the hypothesis that decision makers become more altruistic when they learn that the other person exerted a high level of effort, and become less altruistic when they learn that the other person was lucky.

Keywords: Altruism, information, social preferences, survey experiment, vignette.

JEL-classification: D30, D63, D64.

Acknowledgments: the authors are grateful to Shaun Da Costa, Erik Schokkaert, Bertil Tungodden, Lise Vesterlund and participants at presentations in Bergen, A Coruña, Antwerp, and the 9th ECINEQ meeting for helpful discussions. Financial support of the Research Foundation - Flanders is gratefully acknowledged.

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1 Introduction

There is a large body of evidence that refutes the idea that people care exclusively about their own outcomes. Weighing pure self-interest and concerns about other people is indeed central to many human decisions and actions, such as contributions to the public good, charitable donations, volunteering, or voting on redistribution and welfare policies. Social (or distributional) preferences capture the trade-off between self-interest and other-regarding concerns, and have been used in experimental studies to model and analyse phenomena such as reciprocity (Rabin, 1993; Bolton and Ockenfels, 2000), fairness considerations (Fehr and Schmidt, 1999), positional concerns (Levine, 1998; Charness and Rabin, 2002) and altruism (Andreoni and Miller, 2002), among other aspects.[1]

In this paper, we study social preferences in a general two-person context that allows for non-Paretian positional concerns. We propose several non-parametric altruism tests that compare social preferences with respect to the importance that is given to concerns about the other person.[2] The altruism tests define a partial ordering on the social preferences. They are not only useful to make interpersonal altruism comparisons, but also to study how the social preferences of the same decision maker are reshaped by information about the other person. Indeed, many actions of politicians, fundraisers and other political players attempt to shape social preferences by providing information about others (e.g., by stressing the laziness of welfare claimants or, conversely, their adverse circumstances and bad luck). Little is known, however, about whether and to what extent social preferences in a two-person context can be reshaped by information about the other person. We address this gap and investigate whether the level of altruism in social preferences can be affected by (randomized) information about two characteristics of the other person: the level of effort and luck.

Beliefs about the levels of effort and luck play a central role in the literature on preferences for redistribution (see, e.g., Piketty (1995); Fong (2001); Alesina and Angeletos (2005); Alesina and La Ferrara (2005)). The demand for redistribution is found to decrease when people believe that effort is a more important determinant of economic outcome, while it tends to increase when people believe that luck is more important. Alesina et al. (2001) and Alesina and Glaeser

[1] See Kolm and Ythier (2006) for a volume-length review of the literature on social preferences and altruism.

[2] See Cox et al. (2008) and Heufer et al. (2020) for related tests that compare the level of altruism of social preferences.

(2004) document how beliefs about the role of effort differ between the US and Europe and relate this finding with observed differences in social spending. In normative theories about luck-egalitarianism (Arneson, 1989; Cohen, 1989) and liberal egalitarianism (Roemer, 1998; Fleurbaey, 2008), the distinction between inequalities due to differences in effort and luck also plays a central role. Luck is considered as an illegitimate source of inequality that justifies government intervention, whereas inequalities due to differences in effort are considered legitimate. We are therefore interested to test whether decision makers become less altruistic when they learn that the other person is of a low effort type and, conversely, more altruistic when they learn that the other person is a low luck type.

After its introduction by Kahneman et al. (1986) and Forsythe et al. (1994), the dictator game has become one of the main workhorses used in the experimental literature to elicit social preferences. In a dictator game, decision makers are requested to split a monetary endowment into a pay-off for themselves and a pay-off for another person who is unknown to them. Camerer (2011, p.57) finds that usually more than 60% of the decision makers in a dictator game provide the other person with a positive pay-off.[3] Andreoni and Miller (2002) and Fisman et al. (2007) use a modified dictator game to elicit social preferences in which the relative price of both pay-offs is experimentally manipulated so that revealed preference techniques can be used to test the consistency of a parametric social utility function. In a series of experiments, Cappelen et al. (2007), Cappelen et al. (2013), Almås et al. (2010) and Almås et al. (2020) make use of a "real-effort" dictator game, in which the distribution of the monetary endowment is preceded by a production phase. In the production phase, decision makers choose an investment level (effort) which is rewarded at an exogenously given rate of return (luck). This permits the authors to distinguish between strict egalitarian, libertarian, and liberal egalitarian decision makers.

Before the introduction of the dictator game, however, some geometric methods had been developed to chart and analyse the individual social indifference curves. Scott (1972) proposes a theoretical graphical analysis of social preferences, distinguishing the social motives of avarice, altruism and egalitarianism. MacCrimmon and Siu (1974) modified the non-parametric method proposed by MacCrimmon and Toda (1969) to chart an indifference curve of a social preference ordering. In this method, decision makers are asked in a structured

[3]List (2007) provides a critical analysis of the interpretation of giving in a dictator game.

way to compare several allocations that consist of a pay-off for themselves and a pay-off for an anonymous other person. MacCrimmon and Messick (1976) propose a framework to decompose social preferences in six elementary social motives: self-interest, self-sacrifice, altruism, aggression, cooperation and competition. Decision makers who are exclusively motivated by self-interest choose to maximize their own pay-off, while the self-sacrifice motive would lead the decision makers to minimize their own pay-off. A decision maker who is motivated by pure altruism maximizes the pay-off of the other person, while it is minimized by a decision maker who is motivated by pure aggression. Decision makers motivated by the cooperation motive, choose to maximize the sum of the pay-offs, while in the competition motive the difference between the pay-offs is maximized.[4] Social preferences that are completely determined by the altruism motive, on the one hand, or the competition motive, on the other, emerge as maximal and minimal elements of the altruism partial ordering on social preference relations that is proposed here.

Recently, Kerschbamer (2015) proposed a similar geometric non-parametric method to elicit and classify social preferences, the "equality equivalence test". In this method, decision makers are requested to compare an equal reference allocation with several comparison allocations that are presented in an ordered list.[5] Based on these responses, the social preferences can be grouped into nine archetypes.[6] To incentivize truthful responses, decision makers are matched to another participant after the elicitation procedure and the preferred option of one randomly selected choice is paid to both. Krawczyk and Le Lec (2021) stress-test and relax some of the underlying assumptions of the equality equivalence test (such as the equality of the reference allocation) and compare the results to a non-incentivized version of the elicitation procedure. The authors find decision makers to be slightly more altruistic according to the non-incentivized version compared to the incentivized one and observe a larger variance in the non-incentivized version of the elicitation procedure.

While the elicitation procedure used in this paper resembles the non-incentivized version of the equality equivalence test in many respects, the main difference is that we ask the decision makers to make a limited number of choices be-

[4]MacCrimmon and Messick (1976) also consider competition motives that are based on the ratio, rather than the difference between the pay-offs (see also Lurie (1987)).

[5]See Holzmeister and Kerschbamer (2019) on the implementation of the equality equivalence test on the platform oTree.

[6]Kerschbamer and Müller (2020) and Cabeza (2023) study how the types of social preferences relate to political attitudes and preferences for redistribution.

tween a fixed reference allocation and a comparison allocation. The comparison allocations are generated by the adaptative bisectional algorithm proposed by Decancq and Nys (2021) to elicit preferences in a non-parametric way. The adaptive bisectional algorithm proceeds iteratively and generates, in each iteration, a comparison allocation which is situated in the middle of the interval where the social indifference curve should be, based on the responses to previous choices. This algorithm considerably reduces the number of comparisons for each decision maker, reduces their fatigue, increases precision and, importantly, cuts down the required survey time and costs. These features permit the elicitation of social preferences almost routinely in (online) social surveys with a large representative sample of respondents.

We implemented the elicitation method in an online survey experiment with 573 decision makers from the UK in August 2019. The proposed altruism tests are used to compare the social preferences and to study how the level of altruism is affected by additional information about a hypothetical other person. We used vignettes to provide the decision makers with a structured description of the hypothetical other person along two dimensions: effort and luck.[7] Each vignette is randomly selected from a pool of four vignettes that indicate whether the other person was hard-working or idle (capturing two levels of effort) and whether they came from a privileged background or not (capturing two levels of luck). Vignettes create exogenous and orthogonal identifying variation in the characteristics of the other person in a way that is difficult to achieve in incentivized experiments with non-hypothetical other persons. However, like other self-reported survey questions, the external validity of vignettes may be criticized due to their hypothetical nature.[8] Recently, vignettes have become a popular tool in empirical (sociological) studies of public attitudes on the "deservingness" of welfare state beneficiaries (see, e.g., Kootstra (2016) and van der Meer and Reeskens (2021)).[9] While these studies offer interesting insights about factors such as the role of effort and migration status on attitudes about de-

[7]On the advantages of using vignettes in survey experiments, see Auspurg and Hinz (2015) and Stantcheva (2022).

[8]Reassuringly, Hainmueller et al. (2015) have compared the results of a vignette experiment with a referendum on naturalization of immigrants in Switzerland, and find that the effects estimated from the vignette-based survey match the effects observed in the referendum remarkably well. Moreover, they find that paired designs, such as the one used in this paper, perform better.

[9]Drenik and Perez-Truglia (2018) study the demand for redistribution through workfare by providing a one-dimensional vignette. They find that individuals are more generous towards poor people whom they perceive to be diligent workers.

servingness, the way in which the questions are formulated makes it difficult to draw precise quantitative inferences about the underlying social preferences.

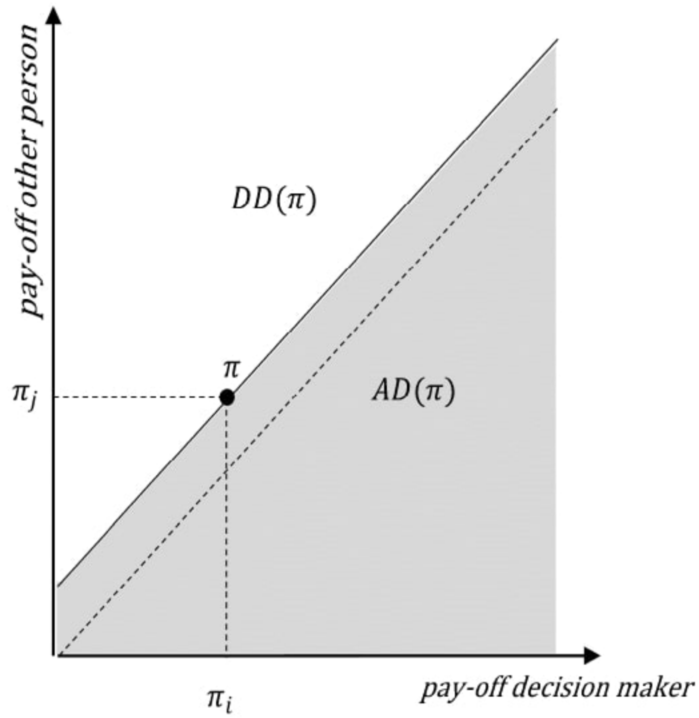
The paper makes four contributions to the literature. First, we present a general, non-parametric, framework to study social preferences which relies on a weakening of the standard monotonicity property and creates room for non-Paretian positional concerns. Second, we discuss several altruism tests that provide a partial ordering of social preferences. Third, we propose an easily implemented elicitation procedure for social preferences that requires decision makers to make only a small number of binary comparisons. Fourth, we compare the level of altruism and study how information about effort and luck affects the altruism of social preferences of 573 decision makers in an online survey experiment in the UK.

The rest of the paper is organised as follows: Section 2 introduces social preferences and their properties. It also discusses how social preferences can be compared with respect to their altruism. The elicitation procedure is presented in Section 3 and the information treatment in Section 4. Section 5 describes the data from the survey experiment and the elicitation procedure. Section 6 presents the results of the interpersonal altruism comparisons and the effect of the information treatment. Section 7 presents our conclusions.

2 Social preferences and altruism

A decision maker i is assumed to have social preferences over allocations $\pi = (\pi_i, \pi_j)$, which consist of a non-negative pay-off for them, denoted π_i, and a non-negative pay-off for another person, π_j. The domain of these allocations is referred to as $D = \mathbb{R}^2_+$. For a given allocation π, the domain can be divided in an advantageous and disadvantageous subdomain. We define the advantageous subdomain of allocation π as the set of all allocations in which the decision maker's pay-off weakly increases more than, or (weakly decreases less) than the other person's pay-off: $AD(\pi) = \left\{ \left(\pi'_i, \pi'_j\right) \in D : \pi'_i - \pi_i \geq \pi'_j - \pi_j \right\}$. The disadvantageous subdomain of allocation π is defined as the set of all allocations in which the decision maker's pay-off increases strictly less than, or (decreases strictly more) than the other person's pay-off, so that $DD(\pi) = \left\{ \left(\pi'_i, \pi'_j\right) \in D : \pi'_i - \pi_i < \pi'_j - \pi_j \right\}$. Figure 1 illustrates the advantageous and disadvantageous subdomain of allocation π graphically.

Figure 1: Advantageous and disadvantageous subdomains of allocation π .



Each decision maker is assumed to have a (weak) social preference relation R over allocations. The expression $\pi' R\pi$ means that the allocation π' is at least as good as π according to the decision maker. The social preference relations P and I refer to the corresponding strict social preference and indifference relations, respectively. For a given allocation π and a social preference relation R, the upper contour set $UC_R(\pi) = \{\pi' : \pi' R\pi\}$ is defined as the set of all allocations which at least as good as π according to the decision maker. Analogously, we define the lower contour set as $LC_R(\pi) = \{\pi' : \pi R\pi'\}$. The indifference set (or curve) is the intersection between the upper and lower contour sets. The social preference relations are assumed to satisfy four general properties, of which the first three are standard.

Completeness. For all π and π' in D, we have $\pi R\pi'$ or $\pi' R\pi$ or both.

Transitivity. For all π, π' and π'' in D, if $\pi R\pi'$ and $\pi' R\pi''$, then $\pi R\pi''$.

Continuity. For all π in D, the contour sets $UC_R(\pi)$ and $LC_R(\pi)$ are closed.

The first property, completeness, ensures that a decision maker can rank any pair of allocations. The second property, transitivity, is a consistency requirement which rules out cycles. The third property, continuity, ensures that sudden preference reversals do no occur. Since the upper and lower contour sets are closed, their intersection, the indifference set, is also closed. While transitivity plays an important role in the elicitation procedure that we use, completeness and continuity do not (see, respectively, Decancq and Nys (2021) and Kerschbamer (2015) for discussions). Completeness and transitivity are standard requirements for preferences to be considered rational (see, e.g., Mas-Colell et al. (1995, p.6)). The fourth property weakens standard monotonicity and is, to the best of our knowledge, novel.[10]

AD-Monotonicity. For all π, π' in D with π' in $AD(\pi)$, if $\pi' \geq \pi$ then $\pi' R \pi$ and if $\pi' > \pi$ then $\pi' P \pi$.

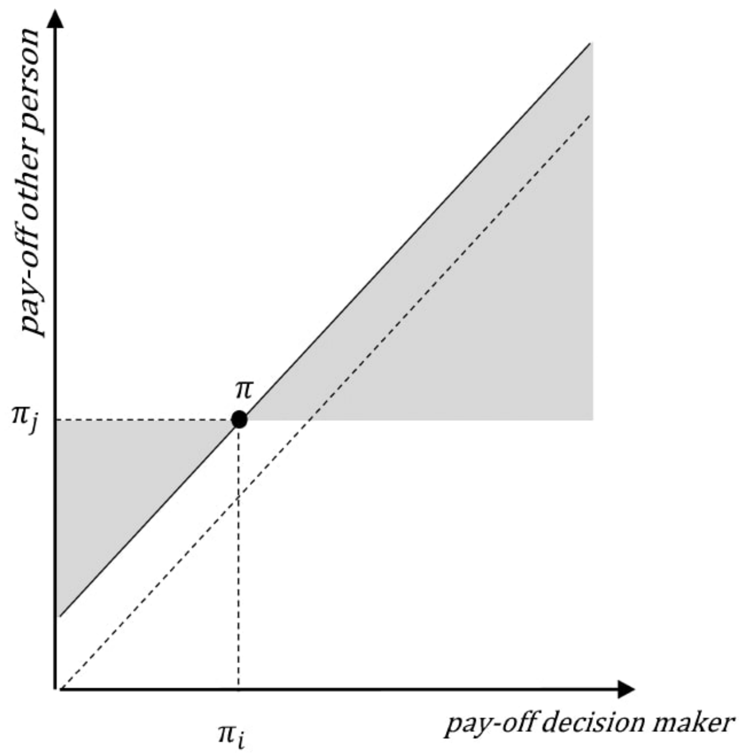
The standard monotonicity property, which requires decision makers to be Paretian and to prefer any allocation in which both pay-offs have increased, is arguably too strong in the context of studying social preferences. Indeed, some decision makers have non-Paretian positional concerns, in the sense that they care about the size of their pay-off compared to the other person's pay-off.[11] Therefore, we weaken the standard monotonicity property and require that a decision maker prefers an allocation in which both pay-offs have increased only when that allocation belongs to his own advantageous subdomain, that is, when the pay-off of the decision maker increases more (decreases less) than the pay-off of the other person. This property is illustrated in Figure 2. AD-Monotonicity requires that all allocations which are situated in the shaded area in the North-East of π belong to the upper contour set of allocation π.[12] Conversely, all allocations in the shaded area in the South-West belong to the lower contour set. Consequently, the indifference set must be situated in the unshaded area.

[10]Let $\geq$ and $>$ denote the standard vector inequalities. We write $\pi' \geq \pi$ if the weak inequality holds in all dimensions and $\pi' > \pi$ if at least one of the inequalities also holds strictly.

[11]Duesenberry (1949) calls such decision makers "status seeking" or "interested in relative income". MacCrimmon and Messick (1976) and Charness and Rabin (2002) refer to them as "competitive" and Levine (1998) and Kerschbamer (2015) as "spiteful".

[12]AD-Monotonicity captures the conjunctive combination of the altruism and competition motive in the framework proposed by MacCrimmon and Messick (1976). Decision makers prefer allocations that increase the pay-off of the other person (altruism motive) as long as the difference between both pay-offs increases as well (competition motive).

Figure 2: When social preferences satisfy AD-monotonicity, the indifference curve through π must lay in the unshaded area.



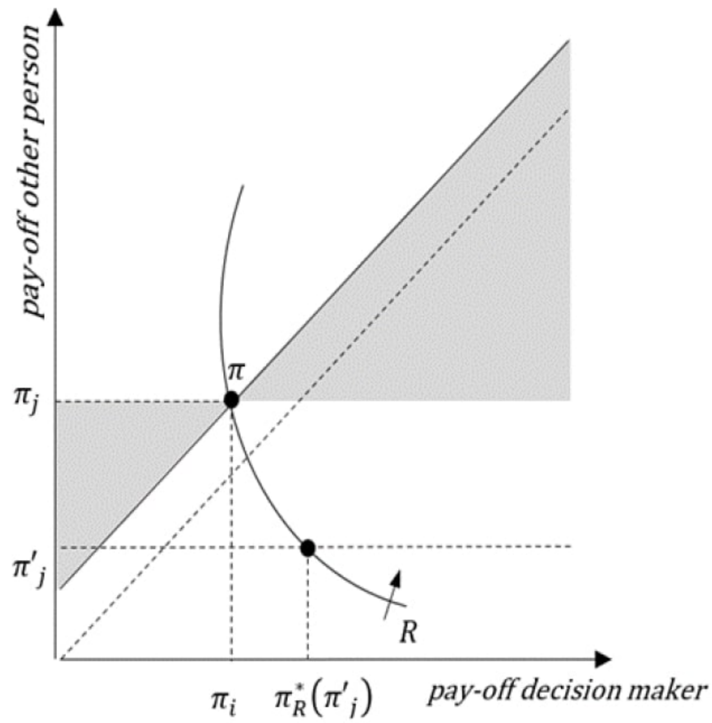
AD-Monotonicity ensures that the indifference set is thin. For any given level of the other person's pay-off, there is at most one allocation that belongs to the indifference set of a given allocation π. The pay-off that is required by a decision maker with social preferences R to be indifferent to π when the other person receives pay-off π'_j, is called the equivalent pay-off at π'_j and is denoted $\pi^*_R(\pi'_j)$. The equivalent pay-off can be implicitly defined as:

$$(\pi_i, \pi_j)\, I \left(\pi^*_R(\pi'_j), \pi'_j\right). \tag{1}$$

As can be seen in Figure 3, AD-Monotonicity ensures, furthermore, that the equivalent pay-off at π'_j is situated in the advantageous subdomain of π when $\pi'_j \leq \pi_j$ and in the disadvantageous subdomain of π, otherwise.

Finally, we define what it means for a social preference relation to be more

Figure 3: The equivalent pay-off at π'_j for social preference relation R, $\pi^*_R(\pi'_j)$.



altruistic at a given allocation π than another social preference relation (see Cox et al. (2008) and Heufer et al. (2020) for similar definitions). It is useful to do this first for the advantageous subdomain and afterwards for the disadvantageous subdomain of π. For a given allocation π, we say that one social preference relation is more AD-altruistic at π than another preference relation if all allocations in the advantageous subdomain of π that are preferred by the more altruistic social preference relation are also preferred by the less altruistic preference relation. A decision maker with more AD-altruistic social preferences will therefore require a larger pay-off for themselves to compensate for the loss of the other person.

More AD-Altruistic at π. Social preference R' is more AD-altruistic than R at π, if $R' \neq R$ and $\pi' R' \pi$ implies that $\pi' R \pi$ for all π' in $AD(\pi)$.

We can define in analogous way what it means for a social preference relation to be locally more DD-altruistic at π. For a given allocation π, we say that one social preference relation is more DD-altruistic at π than another preference relation, if all allocations in the disadvantageous subdomain of π that are preferred by the less DD-altruistic social preference relation are also preferred by the more altruistic preference relation.

More DD-Altruistic at π. Social preference R' is more DD-altruistic than R at π, if $R' \neq R$ and $\pi' R \pi$ implies that $\pi' R' \pi$ for all π' in $DD(\pi)$.

The definitions on both subdomains of π can be concatenated to define what it means for social preference R' to be more altruistic than R at π.

More Altruistic at π. Social preference R' is more altruistic than R at π, if R' is more AD-altruistic and more DD-altruistic than R at π.

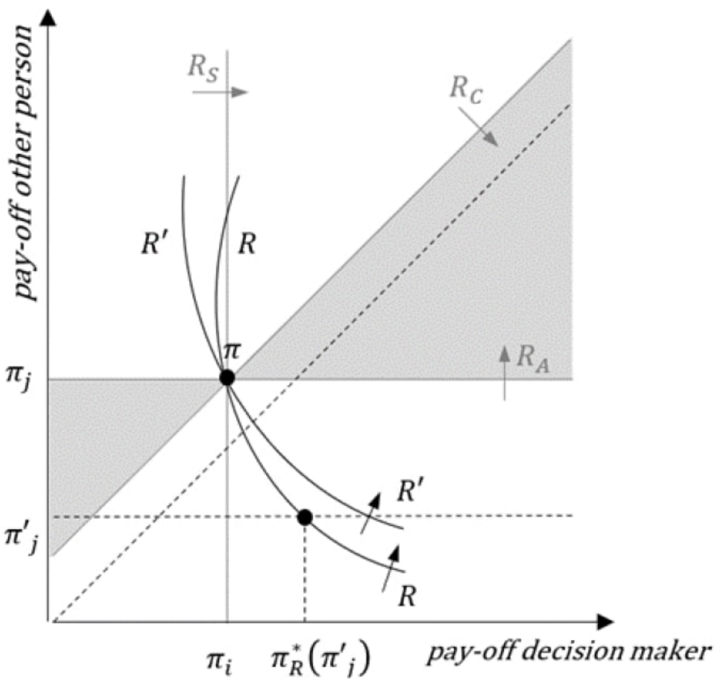
This definition provides a partial ordering on the set of social preference relations. A pair of two different social preference relations can be ranked when the social indifference curves through π cross only once. In other words, the "more altruistic at π than" relation implies a single-crossing property on the social preference relations. Building on the definition of the equivalent pay-off, a test of whether R' is more altruistic than R at π, can be implemented by checking the following series of inequalities:

$$\begin{cases} \pi^*_{R'}(\pi'_j) - \pi^*_R(\pi'_j) \geq 0 & \text{for all } \pi'_j \leq \pi_j \\ \pi^*_{R'}(\pi'_j) - \pi^*_R(\pi'_j) \leq 0 & \text{for all } \pi'_j > \pi_j. \end{cases} \tag{2}$$

The first series of inequalities test whether R' is more AD-altruistic than R at π, while the second series of inequalities test whether R' is more DD-altruistic than R at π. We say that a test fails when there is at least one level of the pay-off for the other person, π'_j, for which the inequality does not hold. When both tests are passed, R' is more altruistic than R at π. Moreover, the magnitude of the difference between both equivalent pay-offs, or its integral across all relevant π'_j values, can provide a measure of how much more altruistic at π the social preference relation R' is compared to R.

Figure 4 graphically illustrates the altruism definitions and tests. The social preference relation R' depicted in the figure is more AD-altruistic than R at allocation π, since the upper contour set in the advantageous subdomain of R' is nested in the upper contour set of R. The social preference relation R' is also more DD-altruistic than R at allocation π, since the upper contour set in the disadvantageous subdomain of R is nested in the upper contour set of R' and, consequently, R' is more altruistic than R at π.

Figure 4: The social preference relation R' is more altruistic than R at π.



The social preference relation with the highest level of altruism at π is the social preference relation R_A, which is exclusively determined by altruistic motives as defined by MacCrimmon and Messick (1976) (i.e., the social preference relation with a horizontal indifference curve in Figure 4). According to the altruism tests, the purely self-interested social preference relation R_S (the vertical indifference curve in Figure 4) is less altruistic, but it is not the social preference which shows the lowest level of altruism, once positional concerns are allowed for. The social preference with the lowest level of altruism at π is R_C, which is exclusively determined by competitive motives (with an indifference curve with slope equal to one in Figure 4). The proposed altruism tests can be used to compare a decision maker's altruism with respect to a self-interested decision maker (as in the classification proposed by Kerschbamer, 2015), to make interpersonal comparisons of the level of altruism, or to study the effect of information on the level of altruism of a decision maker.

3 Elicitation of social preferences

We propose a method to elicit social preferences that builds on the implicit definition of the equivalent pay-off in expression (1). In this method, decision makers are asked to make T dichotomous choices between two allocations: the reference allocation π, which remains fixed across all choices, and a comparison allocation (π_t^*, π_j'), which is adjusted after each choice $t = 1, \ldots, T$. In the empirical part of this paper, we consider $T = 3$ to avoid fatigue. Importantly, we select a reference allocation $\pi = (20, 20)$, in which both pay-offs are equal. Consequently, the advantageous subdomain of π contains all allocations where the pay-off of the decision makers is larger than or equal to the pay-off of the other person, and while the disadvantageous subdomain contains all other allocations.

In the comparison allocation, π_j' denotes the pay-off of the other person at which the equivalent pay-off is elicited. We consider two different values for π_j', one which is smaller than the pay-off in the reference allocation, π_j, and one which is larger (Table 1 provides the precise parameter values). This choice permits the elicitation of an equivalent pay-off in the advantageous and disadvantageous subdomain, respectively.

Table 1: Parameter values of the adaptive bisectional algorithm.

	π_j'	$\underline{\pi}_0^*$	$\overline{\pi}_0^*$	π_1^*
Advantageous subdomain	10	10	40	20
Disadvantageous subdomain	30	0	30	20

The level of π_t^*, that is, the pay-off of the decision maker in the comparison allocation of each choice t, is obtained by means of the adaptive bisectional algorithm (Decancq and Nys, 2021). This algorithm proceeds iteratively and generates in each iteration a value for the next iteration, which is situated precisely in the middle of the interval where the equivalent pay-off of the decision maker should lie based on the previous choices:

$$\pi_{t+1}^* := \left(\underline{\pi}_t^* + \overline{\pi}_t^*\right)/2, \tag{3}$$

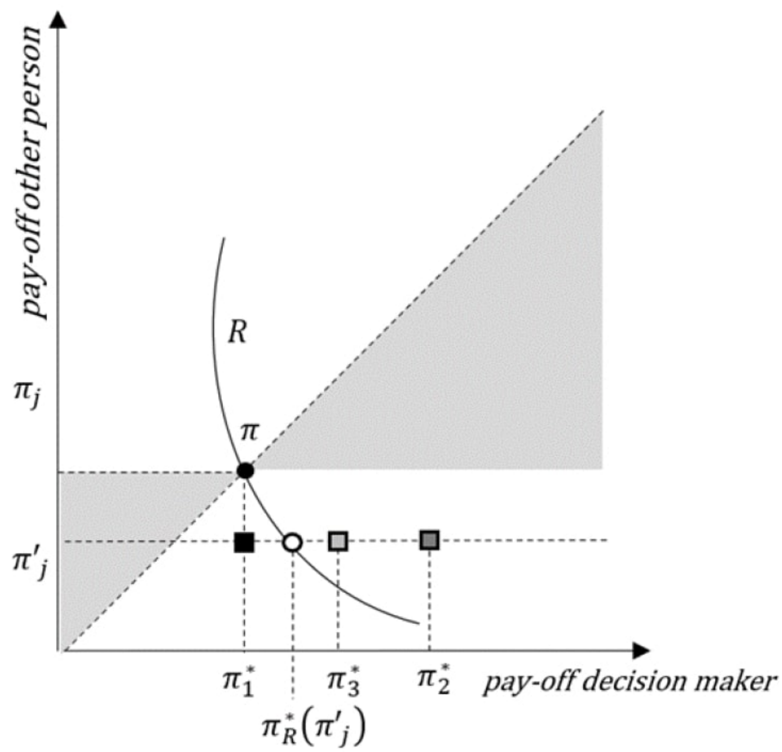
where $\underline{\pi}_t^*$ is the lower bound on the equivalent pay-off π^* in iteration t and $\overline{\pi}_t^*$ the upper bound, such that $\pi_t^* \in [\underline{\pi}_t^*, \overline{\pi}_t^*]$ in each iteration t. This interval is halved in each iteration of the algorithm.

In the initial step of the algorithm ($t = 0$), starting values for the lower and upper bounds on the equivalent pay-off ($\underline{\pi}_0^*$ and $\overline{\pi}_0^*$, respectively) are needed. These values can be set based on the properties of the social preferences or chosen "wide enough" so to ensure that for all decision makers the equivalent pay-off π^* is indeed situated between the bounds (the third and fourth columns of Table 1 present the starting values chosen). Moreover, we have chosen to set the value of π_1^* equal to the the pay-off of the decision maker in the reference allocation (i.e. $\pi_1^* := \pi_i$), rather than by using expression (3). There are at least two reasons for this choice. First, we believe that it eases the first comparison that decision makers face (as their own pay-off is identical in the reference allocation and the first comparison allocation). Furthermore, it is well-established in the literature on dichotomous choice experiments that the first choice may create some "starting-point bias".[13] While the presence and size of this starting-point bias has not been investigated in this context, we prefer our results to be potentially biased towards eliciting self-interested preferences rather than against.

In each consecutive iteration $t = 1, \ldots, T$, the value of the lower bound $\underline{\pi}_t^*$ or the upper bound $\overline{\pi}_t^*$ is updated, based on the choice of the decision maker between the reference allocation and the comparison allocation. Figure 5 illustrates the adaptive bisectional algorithm in the advantageous subdomain, when the decision maker receives more than the other person. In this figure, the (unknown) indifference curve of the social preference relation R of the decision maker is depicted, as well as the equivalent pay-off $\pi_R^*(\pi_j')$. Based on this indifference curve, the reference allocation π will be chosen by the decision maker over the first comparison allocation (π_1^*, π_j'), indicated by the black square. Because the social preferences satisfy AD-monotonicity and transitivity, the equivalent pay-off must be larger than π_1^*, so that this value can be a new lower bound on the equivalent pay-off ($\underline{\pi}_1^* := \pi_1^*$). The upper bound remains unaffected when the reference allocation is preferred over the comparison allocation ($\overline{\pi}_1^* := \overline{\pi}_0^*$). In the next iteration, the comparison allocation becomes (π_2^*, π_j'), where π_2^* is computed using expression (3). This comparison allocation is indicated by the dark grey square in Figure 5. Observing that the decision maker chooses the second comparison allocation over the reference allocation, the equivalent pay-off $\pi_R^*(\pi_j')$ must be smaller than π_2^*. This permits a decrease in the upper bound of the interval where the equivalent pay-off is situated. Also, in the third it-

[13] See Boyle et al. (1985) for an early discussion of the presence of starting point bias in the context of games designed to find the price for an environmental good, and Araña and León (2007) for a more recent study of anchoring effects in dichotomous choice experiments.

Figure 5: Adaptive Bisectional Dichotomous Choice algorithm to define choices that the decision maker faces. Example with $T = 3$ iterations.



eration, the decision maker chooses the comparison allocation, which allows a further decrease in the upper bound of the interval. After the decision maker has made three choices, $\underline{\pi}_3^* = \pi_1^*$ and $\overline{\pi}_3^* = \pi_3^*$ provide a lower and upper bound on the equivalent pay-off $\pi_R^*(\pi_j')$. In general, the elicited interval $[\underline{\pi}_T^*, \overline{\pi}_T^*]$ contains all values of the equivalent pay-off which are consistent with the T dichotomous choices of a decision maker.

This non-parametric elicitation method resembles the "equality equivalence test" proposed by Kerschbamer (2015) and shares many of its advantages and disadvantages. Like the equality equivalence test, it is a non-parametric method which imposes only mild requirements on the social preferences. The most important difference is that the equality equivalence test presents the comparison allocations as an ordered list of several pay-offs, rather than as a sequence of dichotomous choices that are generated by the adaptive bisectional algorithm. In an ordered list, decision makers have to make more comparisons to reach the same level of precision.[14] The adaptative bisectional algorithm involves some tedious, but standard, routing, which can be implemented easily in a Computer-Assisted Personal Interview (CAPI) or Computer-Assisted Web Interview (CAWI) survey mode. Nevertheless, the ordered list approach can arguably be even more easily implemented in a Pen-and-Paper Personal Interview (PAPI) survey mode.

4 Information treatment

To study how the characteristics of the other person affect the level of altruism in the social preferences of the decision maker in π, we provide randomized information about the level of effort and luck of the other person using a hypothetical vignette.

After the equivalent pay-offs are elicited in the advantageous and disadvantageous subdomains, the decision makers are shown one randomly selected vignette from a pool of four vignettes. This vignette describes in a stylized way two characteristics of the other person (see Table 2). The first characteristic is whether the other person comes from a privileged or underprivileged background. As shown in the table, we consider coming from a privileged background a sign of high luck and coming from an underprivileged background a sign of low luck. The second characteristic indicates whether the other person is hard-working or idle. We interpret being hard-working as a sign of high effort and being idle of low effort.

Table 2: Information treatments in the vignettes

Vignette	Luck	Effort	Wording: *"The other person comes from ...*
1 (LL/LE)	low	low	*an underprivileged background and is idle."*
2 (HL/LE)	high	low	*a privileged background and is idle."*
3 (HL/HE)	high	high	*a privileged background and is hard-working."*
4 (LL/HE)	low	high	*an underprivileged background and is hard-working."*

After the decision makers are shown a vignette about the level of effort and luck of the other person, we elicit the equivalent pay-off again in the advantageous

[14]After T choices in the bisectional algorithm, the size of the interval to which the equivalent pay-off of the decision maker belongs, is narrowed to $(\overline{\pi}_0^* - \underline{\pi}_0^*)/2^T$. Hence, the size of the interval shrinks exponentially. Alternatively (as proposed by Kerschbamer, 2015), when decision makers go through a sequence or ordered list of T equally distanced comparison allocations, the size of the interval only shrinks only at a linear rate.

and disadvantageous subdomains using the same elicitation procedure. Once this information is obtained, we investigate whether and how much the elicited equivalent pay-off has changed in the advantageous and disadvantageous subdomain. In some cases, this allows us to reject hypotheses about the effect of information on the level of altruism as defined in Section 2. For instance, if we observe that the equivalent pay-off of a decision maker elicited in the advantageous subdomain is lower after receiving the information that the other person comes from a privileged background and is idle (Vignette 2), we can reject the hypothesis that the decision maker became more altruistic after receiving this information.

As discussed in the previous section, the elicitation method only provides us with intervals to which the equivalent pay-offs belong. Hence, for the difference between the equivalent pay-offs before and after the information treatment, we also obtain an interval which contains all possible values that are consistent with the observed dichotomous choices.

5 Survey experiment

We carried out an online survey experiment in the UK in August 2019. The survey experiment was implemented by the survey agency Qualtrics, which uses a non-probability based sampling strategy. Cross-quotas were set on age and gender in order to ensure that the sample bears resemblance to the composition of the overall UK population.[15] A total of 573 decision makers participated in the survey.[16] The decision makers are rewarded around 5 euros for taking part in the online survey. This amount is conditional on fulfilling certain time and attention requirements, but not on the choices made in the elicitation procedure.

In the survey we gather demographic, socio-economic and ideological information. The first column of Table 3 presents summary statistics based on the total sample. The sample is balanced (by design) in terms of gender. Also, roughly half the decision makers are married and about 55% have children. About 42% of the sample declares they live either in a big city or on its outskirts. In terms

[15]The quota's require 25% of the sample to be younger than 35 years old, and 25% to be older than 66, with equal shares of female and male decision makers in each age group. While the main other demographic and socio-economic variables turn out to be in line with population figures for the UK, the sample may not be representative for the UK.

[16]The gross sample consisted of 585 decision makers. The responses of 12 decision makers were removed because of a routing error.

Table 3: Summary statistics for sample and treatment groups.

Characteristics	Total Sample	Treatment groups 1 LL/LE	2 HL/LE	3 HL/HE	4 LL/HE	Pr>F
Female	49.7%	48.2%	46.8%	48.9%	54.8%	0.54
Married	49.4%	49.6%	48.9%	51.7%	47.2%	0.90
Children	54.6%	55.2%	57.3%	48.2%	57.6%	0.35
Urban	42.2%	41.3%	44.0%	44.8%	38.9%	0.73
Age						
- between 18 and 35	27.9%	26.6%	23.1%	31.5%	30.6%	0.36
- between 36 and 50	19.7%	19.6%	21.7%	19.6%	18.0%	0.90
- between 51 and 65	27.7%	30.1%	28.0%	23.8%	29.2%	0.65
- over 66	24.6%	23.8%	27.3%	25.2%	22.2%	0.79
Education						
- Primary/secondary	38.2%	37.4%	38.6%	36.2%	42.0%	0.68
- Professional training	18.5%	20.1%	20.7%	18.1%	13.3%	0.39
- Bachelor's or above	43.3%	42.4%	40.7%	45.6%	44.8%	0.84
Annual income						
- Under £19,000	25.7%	24.2%	26.2%	23.4%	28.8%	0.52
- £19,000 - 34,999	33.6%	29.7%	42.1%	31.2%	31.6%	0.22
- Above £35,000	40.7%	46.1%	31.7%	45.3%	39.6%	0.08
Right-oriented	42.7%	39.9%	46.1%	37.8%	47.2%	0.29
N	573	143	143	143	144	

of socio-economic characteristics, almost 40% of the decision makers had a basic level of education, while 43% had received higher education.[17] One fifth of the sample declares they earn less than £19,000 per year and about 41% of the sample states they make more than £35,000. Concerning ideology, almost 43% position themselves as right-wing.

Based on the vignette received in the information treatment, we group the decision makers into four treatment groups. Since the vignettes are randomly assigned to the decision makers, the demographic, socio-economic, and ideology characteristics are expected to be balanced across the four treatment groups. The right-most column of Table 3 provides p-values of an F-test of the joint significance of the difference, which confirms this expectation.

The top panel of Figure 6 shows the distribution of the total response time used by the decision makers in the survey to make all binary comparisons. In total, each decision maker makes 12 binary choices, divided into two rounds. Round one presents three choices in the disadvantageous subdomain and three on the advantageous subdomain, before the vignette is shown. Then, in Round 2, after receiving the information treatment, three more choices in the disadvantageous

[17] Basic education is defined as having completed secondary education or lower. Higher education consists of having attended university to do a Bachelor's, Master's or PhD degree.

and advantageous subdomains are presented. This sequence is identical for all decision makers.[18] The median duration is 55 seconds and for 95% of the decision makers the entire elicitation procedure took less than 100 seconds. We find that older decision makers take longer to make all of the binary comparisons than the younger decision makers (e.g., on average, decision makers over 65 take 21 seconds longer than decision makers aged between 18 and 35).

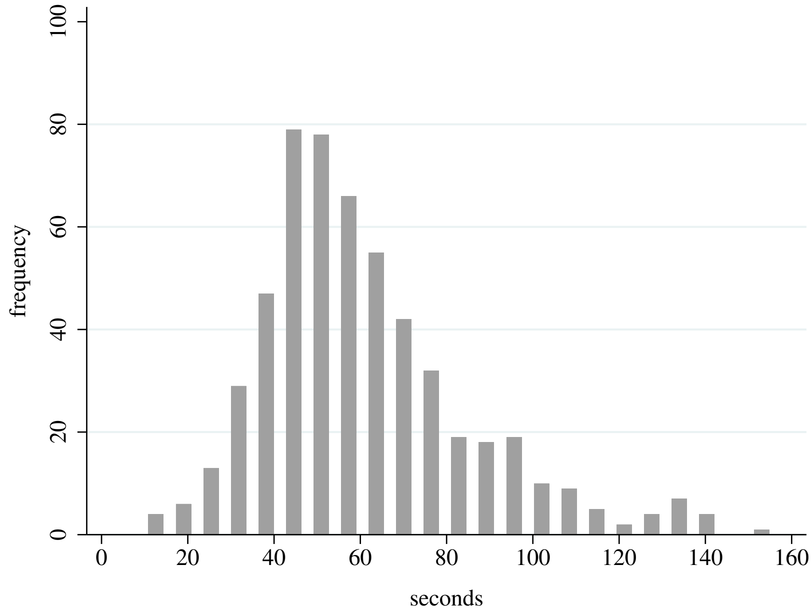
The bottom panel of Figure 6 presents the average time the decision makers spend on each choice. This figure suggests a steep learning curve. While decision makers spend on average around 7 seconds on their first choice, the final choices are made considerably faster (in about 4 seconds). The seventh choice forms an exception to this declining trend, being the first choice after the information treatment. This finding suggests that the decision makers at least considered the vignette and spend some time reading it.

6 Results

In this section, we analyse the equivalent pay-offs that are elicited in the survey experiment, the socio-demographic correlates of the level of altruism, and the impact of the information treatment on the level of altruism.

[18] We follow Kerschbamer (2015) in eliciting the equivalent pay-off first in the disadvantageous and then in the advantageous subdomain for all decision makers (note, however, that Krawczyk and Le Lec (2021) reverse the order). It is an open question whether and to what extent this order affects the findings.

Figure 6: Total duration of 12 binary choices (top panel) and average time by choice (bottom panel).



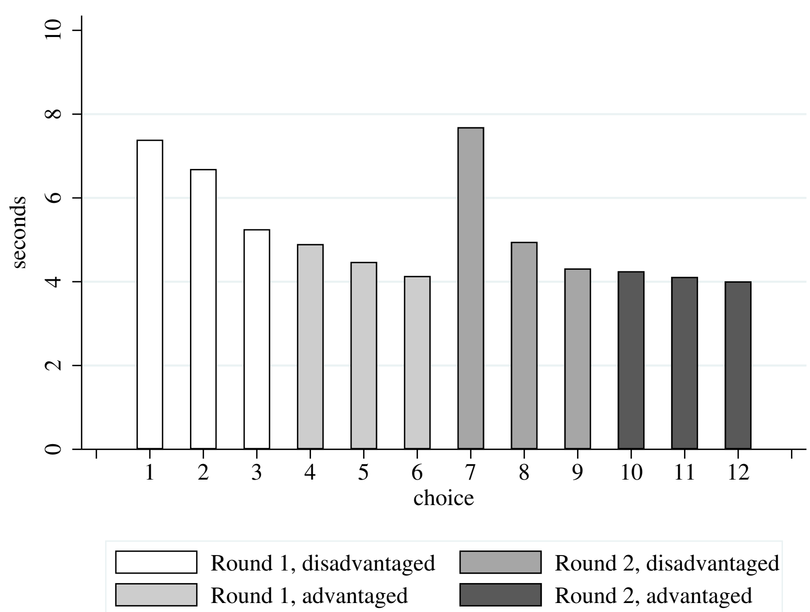
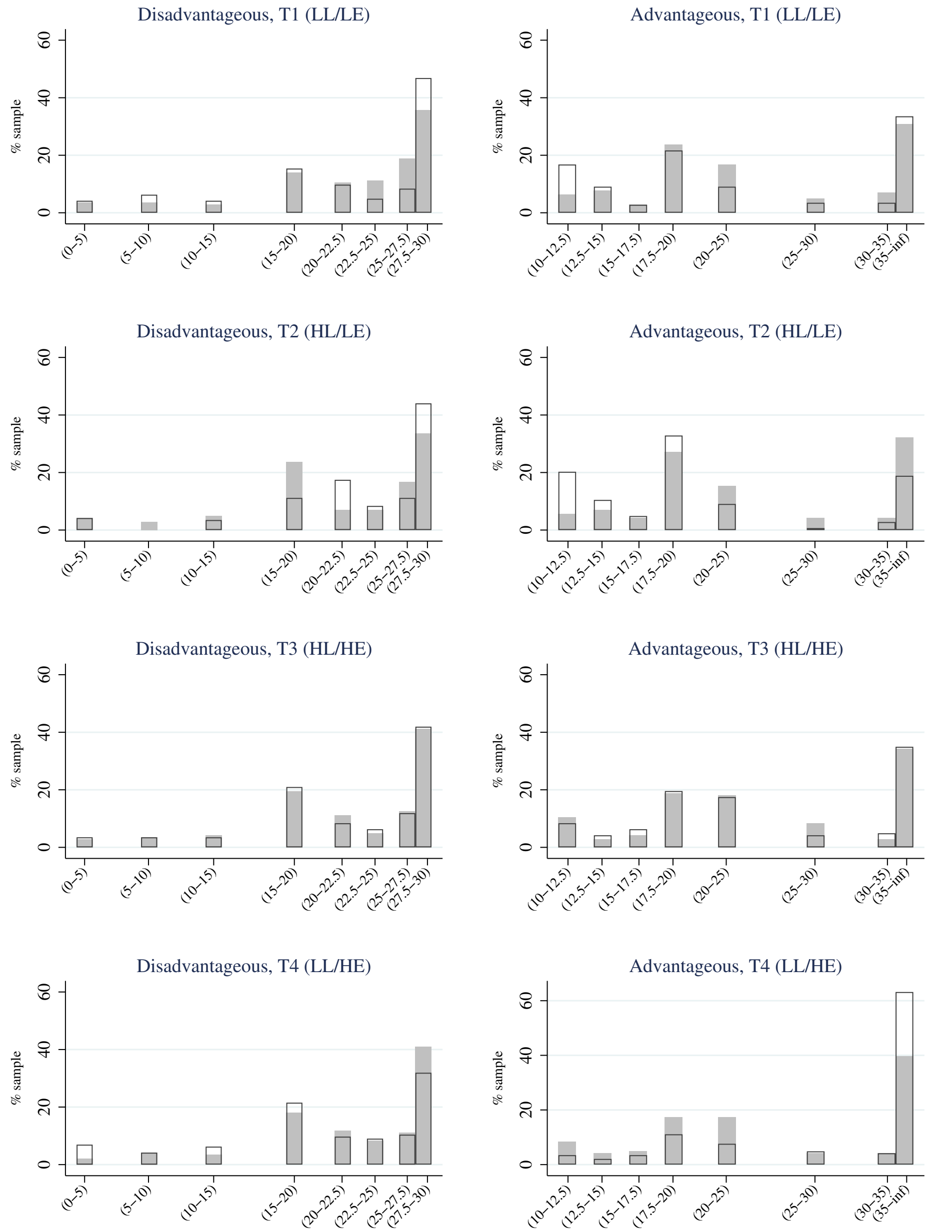


Figure 7: Equivalent pay-offs before and after treatment.



Note: light gray bars, baseline / White bars, after treatments

Figure 7 presents the distribution of the equivalent pay-offs in the advantageous and disadvantageous subdomains, by treatment groups. The top row of panels show the distribution of the equivalent pay-offs for the decision makers in the first treatment group, the second row the second treatment group, and so on. The left-hand panels of each row shows the elicited equivalent pay-offs in the disadvantageous subdomain (i.e., $\pi'_j > \pi_j$), while the right-hand panels show the elicited equivalent pay-offs in the advantageous subdomain (i.e., $\pi'_j \leq \pi_j$). The distribution of the equivalent pay-offs, elicited before the information treatment, is indicated by the grey bars in each panel. A large proportion of the sample chooses the equal reference allocation in all choices, which leads to maximal equivalent pay-offs. More specifically, between 30% and 40% of decision makers prefer the equal reference allocation in all choices on either the advantageous or disadvantageous subdomains, while 21% did this in both subdomains.[19] Most decision makers (around 70%) display non-Paretian positional concerns in the disadvantageous subdomain or, in other words, they care about the size of the pay-off they receive relative to that of the other person.

As expected from the random assignment to treatment groups, the distribution of the equivalent pay-offs before the information treatment is very similar across treatment groups. In contrast, the distribution of the equivalent pay-offs after the information treatment (indicated by white bars in Figure 7) differs substantially across the treatment groups, indicating that the vignettes induced some social preference changes. The results of the treatment with the second vignette (HL/LE) indicate that higher equivalent pay-offs are elicited on the disadvantageous subdomain and lower equivalent pay-offs on the advantageous subdomain after the treatment. This finding is consistent with the treatment causing social preferences to be less altruistic at π. The treatment with the fourth vignette (LL/HE) can be seen to have generated the opposite shift, suggesting more altruistic social preferences at π.

In Table 4 we look at the socio-demographic correlates of the equivalent pay-offs that are elicited in the advantageous and disadvantageous subdomain prior to

[19]Similar findings are obtained by Kerschbamer (2015, p.100), with 24% of decision makers expressing positive willingness-to-pay for increasing the other's pay-offs in the advantageous subdomain, and negative in the disadvantageous subdomain. Kerschbamer and Müller (2020, p.25) find as many as 64% of the decision makers choose the reference allocation in all choices, in both the advantageous and disadvantageous subdomain. Finally, Krawczyk and Le Lec (2021, p.22) categorise between 12% and 19% of their respondents as inequality averse (depending on the estimation method) and between 20% and 33% when implementing an incentivised task.

Table 4: Results of interval regression in the disadvantageous and advantageous subdomains, first round of the experiment (before information treatment).

	(1)		(2)	
	Disadvantageous		Advantageous	
Female	1.259**	(0.544)	1.363*	(0.811)
Married	0.070	(0.929)	1.981	(1.439)
Children	-1.266	(0.818)	-2.732**	(1.174)
Married w/ children	0.029	(1.212)	1.221	(1.786)
Urban	-1.455**	(0.637)	-0.370	(0.879)
Aged 36-50	1.565*	(0.823)	-0.489	(1.169)
Aged 51-65	1.995**	(0.823)	0.328	(1.150)
Aged over 66	2.629***	(0.876)	-0.190	(1.231)
Professional training	-0.181	(0.732)	0.992	(1.156)
Bachelor's or above	-0.367	(0.628)	-0.451	(0.881)
Income 19,000 - 34,999	0.503	(0.685)	-0.138	(1.033)
Income above 35,000	0.291	(0.709)	-0.930	(1.022)
Right-oriented	-2.006***	(0.582)	-2.366***	(0.801)
Constant	24.185***	(1.150)	28.943***	(1.944)
Logarithm σ	1.836***	(0.038)	2.204***	(0.018)
Logarithm likelihood	-1234.18		-1313.05	
Observations	573		573	

Robust standard errors between brackets. Regional controls included.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

the information treatment. We do this by using a separate interval regression model for each subdomain.[20] These models take a series of socio-demographic characteristics (listed in Table 3) and regional control dummies as explanatory variables and the elicited intervals as explained variable. The coefficients are estimated using a maximum likelihood estimator with robust standard errors. The χ^2 test (with 23 degrees of freedom) equals 0.0001 in the first specification, regarding the disadvantageous subdomain. It confirms that at least one of the predictors' coefficient in the regression is different from zero. The logarithm of the σ statistic equals 1.84 (standard error of 0.04), and reflects the estimated standard error of the regression.[21] In the specification for the advantageous subdomain, the χ^2 test equals 0.0024, while the logarithm of the σ statistic amounts to 2.20 (standard error of 0.02).

Column 1 of Table 4 shows the coefficients of the socio-demographic variables in the interval regression in the disadvantageous subdomain. The constant in

[20] On interval regressions, see Wooldridge (2002, pp.508-509). An alternative, arguably simpler, approach is to take the midpoint of the interval as explained variable.

[21] The smaller the elicited intervals, the more σ approaches the root mean squared error of an OLS regression taking the actual equivalent payoff values as explained variable.

this model is 24.2. This constant captures the (latent) equivalent pay-off of a reference decision maker who is male, unmarried, has no children, is living in a rural area in the UK, is younger than 36 years-of-age, obtained only secondary education, has a yearly income below £19,000 and is left-wing oriented. This reference decision maker is indifferent between the reference allocation (20,20) and the allocation (24.2,30). This finding indicates the importance of non-Paretian positional concerns in the disadvantageous subdomain. The reference decision maker did not consider an increase in his own pay-off by a positive amount smaller than £4.2 to be an improvement if the other persons pay-off increased by £10, that is, when the other person receives considerably more. Using the altruism tests proposed in Section 2, we can reject the hypothesis that the reference decision maker is more DD-altruistic than a self-interested decision maker, who would only consider his own pay-off. Female decision makers and those older than 36 years-of-age are found, on average, to have higher equivalent pay-offs, while decision makers who live in an urban area report lower equivalent pay-offs, as well as decision makers who identify themselves as right-oriented.

We now turn to the equivalent pay-off in the advantageous subdomain (Column 2 of Table 4). The constant in the interval regression model is 28.9. The reference decision maker is found to be indifferent between the reference allocation (20,20) and the allocation (28.9,10). In other words, he would be willing to sacrifice up to £8.9 of his own pay-off to increase the pay-off of the other person with £10. When inspecting the other coefficients in Column 2, it can be seen that female decision makers are found, on average, to have higher equivalent pay-offs. The opposite is true for those decision makers who have children and identify as right-oriented.

To test whether the information treatment changed social preferences, we compare the elicited equivalent pay-offs before and after the information treatment for each decision maker. That is, we check the inequalities in equation (2). Table 5 reports the fail rates of the three proposed altruism tests, by treatment group. We say that a decision maker fails the test of becoming more AD-altruistic, for instance, when at least one equivalent pay-off in the advantageous subdomain becomes strictly smaller after the information treatment. From the first column, it can be seen that for 17,8% of all decision makers the elicited equivalent pay-off after the information treatment was strictly smaller, so that they fail the test of becoming more AD-altruistic. The second row shows that for a comparable share (15.9%) of all decision makers the equivalent pay-off was strictly larger, so that they fail the test of becoming less AD-altruistic. For the remaining 66,3% of decision makers the equivalent pay-off before and after the information treatment is situated in the same interval.

There may be several reasons for the difference between the equivalent pay-offs before and after the information treatment to be small. First, decision makers may have paid no attention to the vignette when answering the questionnaire or found it unrealistic. Second, the social preferences of these decision makers may not be sensitive at all to information about the effort or luck levels of the other person. Third, it is possible that the information in the vignette coincides with prior beliefs of the decision maker. A decision maker who believes, for instance, that all other people come from an underprivileged background and are hard-working, would see no reason to change his own equivalent pay-off when told that the other person indeed comes from an underprivileged background and is hard-working. Finally, our interval-based elicitation method may not be sufficiently fine-grained to capture the change between the equivalent pay-offs.

As can be seen from Table 5, the fail rates vary substantially across the treatment groups. While the fail rate of the test of becoming more AD-altruistic increases to 30.7% after learning that the other person experienced high luck and exerted low effort in the second vignette, the fail rate decreases to 5.5% after learning that the other person experienced low luck and exerted high effort in the fourth vignette. In general, the fail rates of the test of becoming more AD-altruistic are found to be larger after a treatment with a vignette indicating high luck than after a vignette indicating low luck, while the fail rates of a treatment with a vignettes indicating high effort are found to be smaller than vignettes indicating low luck. This evidence is consistent with the hypothesis that learning that the other person experienced high luck makes decision makers less AD-altruistic, while learning that the other person exerted high effort makes decision makers more AD-altruistic. Moreover, the latter effect turns out to be larger than the former, suggesting that more decision makers are sensitive to information about effort than about luck in the advantageous subdomain. The effects of the information treatments on the fail rates in the disadvantageous subdomain are found to be consistent, but less pronounced than the effects on the advantageous subdomain. In general, more decision makers are found to be reactive to the information in vignettes in the advantageous subdomain than in the disadvantageous subdomain. Finally, when turning to the concatenated altruism tests in the bottom row, we notice that the fail rates are generally low, but consistently larger than the product of the fail rates of the underlying tests of AD-altruism and DD-altruism, which suggests that there is some consistency between the responses in both subdomains at the level of the individual decision makers.

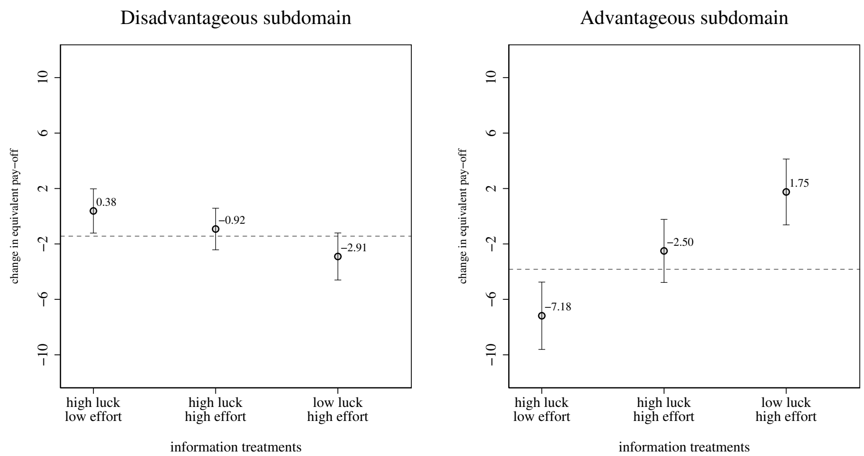
The non-parametric tests in Table 5 indicate how many decision makers changed their social preferences after the information treatment. In Figure 8, we turn to the question of how large the effect of the information treatment is on the equivalent pay-offs of the decision makers. The figure presents the coefficients and 95% confidence interval of the treatment dummies (for the second, third and fourth vignette) in an interval regression model with the change in equivalent pay-off as explained variable. This regression model includes the same set of socio-demographic explanatory variables as the earlier models reported in Table 4.[22] The results obtained in the advantageous subdomain (shown in the right-hand panel of Figure 8) show that the treatment with the second vignette (HL/LE) decreases the equivalent pay-off by about £3.4 compared to the first vignette (LL/LE) when the reference decision maker reports an average reduction of £3.8 in his equivalent pay-off after the information treatment. The treatment with the fourth vignette (LL/HE), on the other hand, increases the equivalent pay-off by about £5.6. Compared to the coefficients of the socio-demographic variables in Table 4, the effects of the information treatments are sizeable. We find that learning that the other person is of the high effort type (Vignette 4 compared to Vignette 1) has a larger effect on the equivalent pay-off than learning that the other person is of the high luck type (Vignette 2 compared to Vignette 1). The importance of effort is consistent with the "sympathy for the diligent" that is observed by Drenik and Perez-Truglia (2018) when considering the demand for redistribution through workfare. We could not find a significant difference between the third vignette (HL/HE) and the first vignette (LL/LE) which suggests that the effects of being simultaneously of the high luck and high effort type largely offset each other. The results on the disadvantageous subdomain (shown in the left-hand panel) are found to be consistent with the results on the advantageous subdomain, but they are found to be smaller in size. Receiving the second vignette (HL/LE) increases the equivalent pay-off by about £1.8, while receiving the fourth vignette (LL/HE) decreases it with about £1.5, compared to the first vignette (LL/LE).

[22]The full regression results are available upon request.

Table 5: Non-parametric altruism tests after information treatment (fail rates).

fails test of	total	treatment groups			
becoming ...	sample	1 (LL/LE)	2 (HL/LE)	3 (HL/HE)	4 (LL/HE)
more AD-altruistic at π	17.8%	23.1%	30.7%	11.9%	5.5%
less AD-altruistic at π	15.9%	16.7%	5.5%	11.1%	29.8%
more DD-altruistic at π	13.6%	13.2%	18.1%	13.9%	9.0%
less DD-altruistic at π	17.1%	16.0%	11.9%	15.3%	25.0%
more altruistic at π	4.3%	6.9%	7.7%	2.1%	0.7%
less altruistic at π	4.1%	4.5%	2.1%	1.4%	8.3%

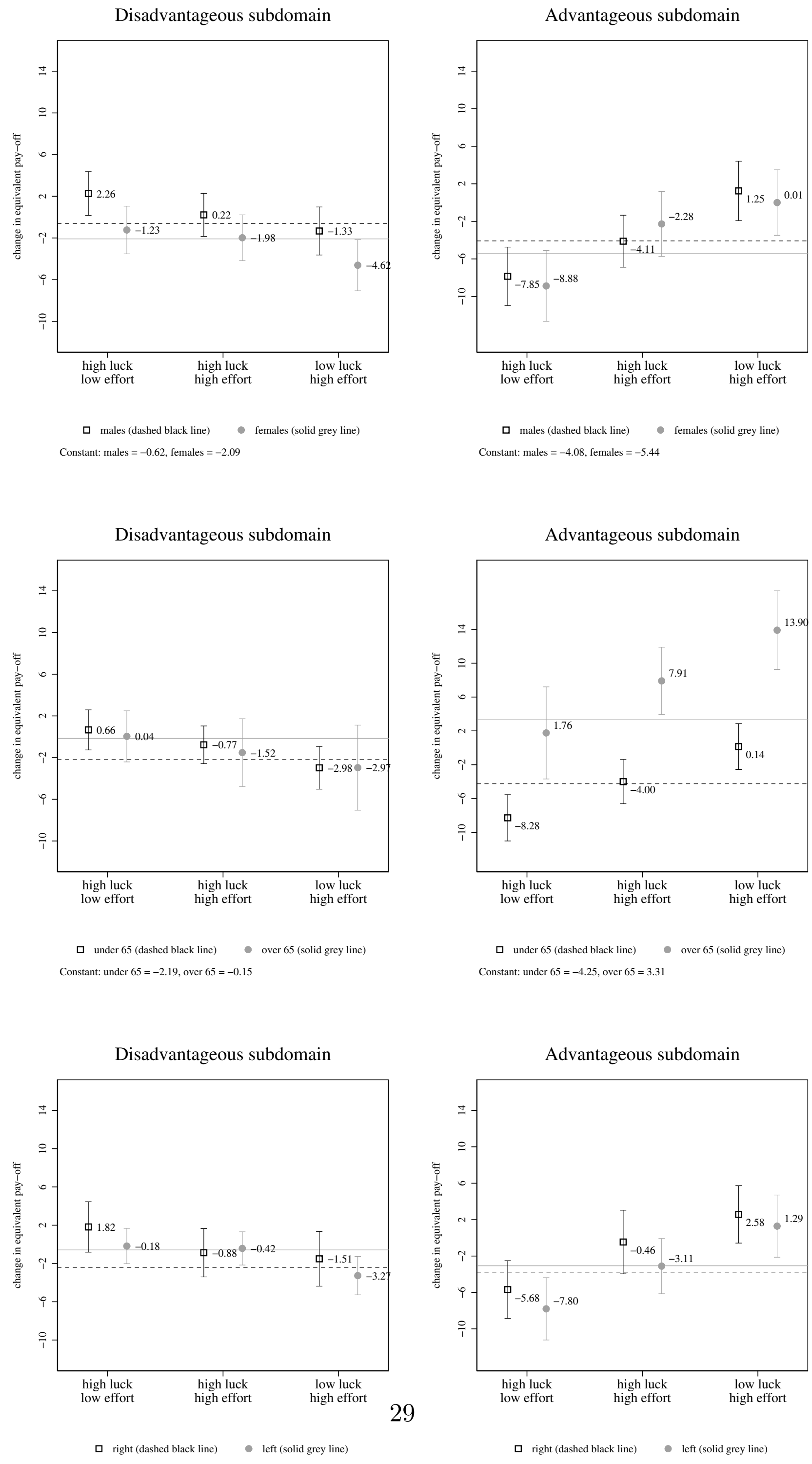
Figure 8: Effects of information treatments.



Note: reference treatment is low luck/low effort. Constant: disadvantageous = −1.44, advantageous domain = −3.83.

In summary, we find evidence that is consistent with the hypothesis that learning that the other person exerted high effort makes decision makers more altruistic, while learning that the other person experienced high luck makes them less altruistic. These effects are more pronounced in the advantageous subdomain, with the effect of high effort being larger than the effect of high luck.

Figure 9: Treatment effects by sex, age, and political orientation.



Note: reference treatment is low luck/low effort.

Finally, we explore whether decision makers with a different socio-demographic background reacted differently to the information treatment in Figure 9. We do this by interacting the coefficients of the information treatments in the interval regression (reported in Figure 8) with three socio-demographic variables: sex, age, and political orientation. The two panels at the top compare the treatment effects for male and female decision makers. While the differences are modest, we see that male decision makers adjust their equivalent pay-offs more after learning that the other person is lucky in combination with a low effort level (Vignette 2), while female decision makers appear to be more sensitive to the effect of the other person exerting high effort (Vignette 4) in the disadvantageous subdomain. The two middle panels look at the differences between decision makers who are younger than 65 and decision makers who are older. In the advantageous subdomain, older decision makers are found to be adjust their altruism level more than younger decision makers when they learn that the other person is of the high-effort type, especially when high-effort is combined with low luck. Decision makers who are older than 65 are found to increase the equivalent pay-offs by £10.6 after learning that the other person made a high effort, that is, after receiving the fourth vignette (LL/HE) compared to the first vignette (LL/LE). This effect dwarves any of the coefficients of the socio-demographic variables in Table 4. In the disadvantageous subdomain, in contrast, the effect of the treatments is much less pronounced and only statistically different from 0 for younger decision makers who received the second vignette (HL/LE) compared to the first vignette (LL/LE). Finally, in the two bottom panels we compare decision makers who identify as right-oriented with decision makers who do not. In the advantageous subdomain, decision makers who identify themselves as right-oriented are found to be more sensitive to learning that the other person exerted high effort (Vignette 4 compared to Vignette 1), whereas the left-oriented decision makers are more sensitive to learning that the other person is coming from a privileged background (Vignette 2 compared to Vignette 1). In the disadvantageous subdomain, right-oriented decision makers are found to be more sensitive to learning that the other person experienced high luck (Vignette 2), while left-oriented decision makers were more sensitive the information that the other person exerted high effort (Vignette 4), compared to Vignette 1.

7 Conclusion

In this paper, we have studied social preferences in a framework that allowed for non-Paretian positional concerns. We discussed several altruism tests that provide a partial ordering of social preferences, by checking inclusion of the upper contour sets of the social preferences in the advantageous subdomain, in the disadvantageous subdomain or in both subdomains. We used an easily implemented elicitation procedure for social preferences that requires decision makers to make only a small number of binary comparisons that are determined by the "adaptive bisectional discrete choice" algorithm. We have studied the level of altruism of 573 decision makers in an online survey experiment in the UK and investigated how a randomly selected vignette with information about the level of effort and luck of the hypothetical other person affects the level of altruism of the decision makers.

In line with the existing literature, we have found that most decision makers are not exclusively motivated by purely self-interested social motives. In the disadvantageous subdomain we have found that non-Paretian positional concerns play an important role, especially for female or older decision makers. In the advantageous subdomain we have found many decision makers to be willing to redistribute to the poorer other person, although decision makers who are right-oriented and have children are less willing. we have found that the level of altruism of the decision makers is affected by the exogenous information that we provide about the other person. Our results are consistent with other findings that indicate decision makers who learn that the other person exerted high effort become more altruistic and, on the contrary, decision makers who learn that the other person experienced a high level of luck, become less altruistic. Decision makers are found to be more sensitive to this information in the advantageous subdomain than the disadvantageous subdomain. Moreover, we have found some evidence that decision makers who are female, older than 65 or who identify as right-oriented are more sensitive to information about effort than to information about luck. Our findings suggest that positional concerns can partly suppress concerns about the source of inequality when decision makers experience disadvantageous inequality.

Our study faces a number of design-related limitations. First, we cannot answer the question of what precisely motivates the decision makers to share their (hypothetical) endowment. While our preferred interpretation is that the level of altruism of social preferences depends on the characteristics of the other person and, in particular, about the source of the inequality between them, we cannot exclude the possibility that decision makers are subject to social pressure when allocating a pay-off to the other person (DellaVigna et al., 2012) or that their responses are driven by experimenter demand effects (Levitt and List, 2007; List, 2007). However, Kerschbamer (2015) argues that the neutral framing of the elicitation procedure reduces experimenter demand effects. We believe that demand effects constitute an interesting avenue for future work. Second, and related, while the vignettes are a powerful way to create exogenous and orthogonal variation in the characteristics of the other person, the external validity of the results may be questioned because of their hypothetical nature. Further investigations, along the lines of the work by Krawczyk and Le Lec (2021), are important to address such questions.

While the vignettes in this study contained only two dimensions and were randomly provided, more sophisticated (efficient) designs (such as discussed by Auspurg and Hinz (2015)) could be used to make the description of the other person richer. This would allow the study of whether and to what extent social preferences are shaped by information about demographic characteristics such as gender, citizenship and migration status and other characteristics capturing the closeness of the connection with the other person.

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