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A New Look at Individual Differences in Perceptions of Unfairness: The Theory of Maximally Unfair Allocations in Multiparty Situations

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Abstract Previous research has demonstrated that unfairness judgments of resource allocations become more complex when there are more than two recipients. In order to explain some of this complexity, we propose a set of psychological mechanisms that may underlie four different choices of maximally unfair resource allocations (MUA): Self-Single-Loser, Self-One-Loser-of-Many, Self-Single-Winner, and Self-One-Winner-of-Many. From this psychological theory, several predictions are derived and tested in vignette studies involving a total of 708 participants recruited online using MTurk. As predicted by our theory, (1) choices of MUA where there is a single loser were much more common when the allocated resource was of negative rather than positive valence, and (2) the amount of egoistic bias individuals exhibited when judging the unfairness in receiving a small rather than a large share in a non-extreme multi-party allocation was predicted by their choices of MUA. These findings suggest that an individual's choice of MUA reveals some generally relevant principles of how unfairness is perceived in multi-party allocations. This opens up new lines of inquiry, especially regarding research on social dilemmas and social value orientation.

Keywords Unfairness · Distributive justice · Inequality · Multi-party allocation · Egoistic bias

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Introduction

Consider an unequal allocation of a valuable resource—e.g., nine antique vases—among several recipients. Suppose that one of them receives five, the second receives three, and the third receives one (5:3:1). Assume further that the recipients are not known to differ in their needs, beliefs, endowments, efforts or rights. This inequality is likely to be perceived as unfair. We may expect that the degree of perceived unfairness would depend on how much the allocation deviates from an equal allocation (e.g., Jasso, 1978). However, assessments of the amount of deviation from equality in a multiparty situation, as perceived by each one of the recipients, are less straightforward than when only two recipients are involved. For instance, it is not evident that the above-mentioned allocation of vases would be more or less unfair to the third recipient, if s/he still got just one vase, but the first two recipients received four vases each (4:4:1). Some would perceive more total unfairness in the first case, while others would perceive more unfairness in the second case. Eriksson and Simpson (2011) suggested a framework for categorizing individuals based on the allocation they would perceive as maximally unfair. The present research aims at elaborating the theoretical underpinnings of this framework. From this theory, we derive a number of predictions, which are tested in two empirical vignette studies.

A Theory of Maximally Unfair Allocations

Eriksson and Simpson (2011, Experiment 3) presented a scenario for participants in which they were told to imagine a situation in which they and three of their neighbors had been taking care of an older neighbor for some time. The old lady had passed away, and in her will she had stated how 36 identical precious vases were to be allocated between the four of you who had taken care of her. Participants were then asked to indicate which allocation they would perceive as maximally unfair. The vast majority (168 out of 183) responded with an allocation that had one of four characteristics: Either (1) self was a single loser receiving none (or almost none) of the vases, while the other three received an equal (or almost equal) number of shares (0:12:12:12); or (2) self was one of three losers receiving none (or almost none) of the vases, which were instead received by only one person (0:0:0:36); or (3) self was one of three winners receiving equal (or almost equal) shares, while a single other received none (or almost none) of the vases (12:12:12:0); or (4) self was a single winner, receiving all (or almost all) of the vases, while the other three received none (or almost none, 36:0:0:0). In this article, we outline a theoretical explanation for this empirical finding by positing a set of three psychological mechanisms whereby maximal unfairness would be perceived in one of these four situations, rather than in any of the many other possible ways of allocating the resource among the parties.

The first mechanism is that *a larger amount of unfairness is experienced as total inequality increases*. In a dyadic allocation, greater perceived unfairness is likely to be perceived the greater the inequality is between the two parties. Following the famous social welfare function of Varian (1976, p. 257), the notion of total inequality can be extended to multi-party allocations as the sum of all pairwise inequalities. If this mechanism was completely responsible for unfairness perceptions, the maximally unfair allocation (MUA) of the 36 vases would be an allocation of all 36 vases to a single recipient.[1] (This single winner could be anyone, either self or another neighbor, as the total inequality is independent of which of them is the recipient.)

Other choices of MUA may arise because there are additional psychological mechanisms at work. Note that the MUA suggested by the total inequality mechanism had one recipient standing out as a single winner. Another interesting possibility is that one recipient may stand out as a single loser. Psychological research has previously established an "identified victim effect," according to which a disproportionately high emotional response is evoked when a single individual is found to be in a bad condition (Kogut & Ritov, 2005; Small & Loewenstein, 2003). It is reasonable to assume that the sensation of unfairness would operate in a similar fashion, that is, it may tend to be disproportionately strong when the unfairness is directed against a single individual. The existence of a "single loser effect"[2] was supported in the studies of Eriksson and Simpson (2011), and their studies also gave some support for a similar aversion to allocations having a single winner. Single winner aversion would support a MUA choice with a single winner, that is, the same choice that was obtained from considering total inequality. However, if a person has sufficiently strong *single loser aversion*, this mechanism would account for a choice of MUA where there is a single loser instead of a single winner.

The above mechanisms point to two different distributions of share sizes as candidates for being maximally unfair: either there is a single winning share or a single losing share. The final mechanism concerns the nature of the share allocated to self, that is, whether self receives a winner's share or a loser's share. According to the equity sensitivity model (Huseman, Hatfield, & Miles 1987), preferences for equity range from the "benevolents" who prefer to benefit *less* than a comparison other to the "entitleds" who prefer to benefit *more* than a comparison other. Extending the use of this terminology to multi-party allocations, we shall refer to an individual as benevolent or entitled if, given a division of a resource into shares of different sizes, she perceives more unfairness from receiving a better or worse share, respectively. Specifically, a benevolent individual should perceive maximal unfairness in an allocation where s/he is a winner, whereas an entitled individual should perceive maximal unfairness in an allocation where s/he is a loser. Thus, adding the mechanism of preferences for receiving either the better or the worse of two shares generates four MUA cases. We refer to the four MUA candidates as Self-Single-Loser (0:4:4:4), Self-One-Loser-of-Many (0:0:0:12), Self-Single-Winner

[1] To see that this is the case, consider an allocation in four shares, $a \geq b \geq c \geq d \geq 0$. It is straightforward to calculate the total inequality as $(a - b) + (a - c) + (a - d) + (b - c) + (b - d) + (c - d) = 3a + b - c - 3d$. This expression is clearly maximized when a is maximal and d is minimal. For 36 vases, this occurs when $a = 36$ and $b = c = d = 0$.

[2] Essentially the same effect, termed "last-place aversion," is discussed in behavioral economics (Kuziemko, Buell, Reich, & Norton 2014).

Table 1 Four possible choices of maximally unfair allocation (MUA)

	Positive valence	Negative valence
Self-Single-Loser	Self: 0, others: 4, 4 and 4	Self: −12, others: 0, 0 and 0
Self-One-Loser-of-Many	Self: 0, others: 0, 0 and +12	Self: −4, others: −4, −4 and 0
Self-Single-Winner	Self: +12, others: 0, 0 and 0	Self: 0, others: −4, −4 and −4
Self-One-Winner-of-Many	Self: +4, others: +4, +4 and 0	Self: 0, others: 0, 0 and −12

Each choice of MUA is illustrated by allocations of 12 units between four recipients (positive valence) or four replacers (negative valence). The "single" share size in every allocation is underlined

(12:0:0:0), and Self-One-Winner-of-Many (e.g., 4:4:4:0). The first column of Table 1 depicts these situations in the case of a positive resource of 12 units to be allocated to four recipients.

Consider that allocations may also involve negatively valent resources, such as when shares of a valuable resource must be *replaced* rather than received by the recipients. Negative valence allocations have been studied before (e.g., Törnblom, 1988), but not with respect to maximal unfairness. The four MUA candidates can readily be applied to the negative valence case (second column of Table 1). However, note that the negative valence allocations are not mirror images of the corresponding positive valence allocations.

For instance, consider the Self-Single-Loser allocation. In the positive valence case, self receives a zero share while the three others receive equal positive shares (0:4:4:4). In particular, this allocation does not have maximal total inequality. Instead, maximal total inequality is attained in allocations with a single winner (who receives a maximally large share, 12:0:0:0). Compare this with the Self-Single-Loser allocation in the negative valence case. Self receives an extreme negative share, while the three others receive zero shares. In contrast to the positive valence case, maximal inequality is in the negative valence case attained in allocations with a single loser (who replaces a maximally large share).

Our theory posits total maximal inequality as one of the mechanisms determining an individual's choice of MUA. When valence changes from positive to negative, this mechanism will evidently favor MUA candidates with a single loser instead of a single winner. If our theoretical reasoning is correct, we should then expect a corresponding shift in MUA choices. Thus,

Hypothesis 1 Choices of MUA with a single loser—that is, Self-Single-Loser and Self-One-Winner-of-Many (in which case another recipient is a single loser)—should be more common in the negative valence case than in the positive valence case.

Does Choice of MUA Predict Perceived Unfairness of Non-Extreme Allocations?

Consider the question of what information is contained in an individual's choice of MUA. By itself, it tells us which of several extreme allocations the individual perceives as maximally unfair—but can we infer anything else? Prior research suggests that we possibly can. Eriksson and Simpson (2011, Experiment 5) found that participants whose MUA choice was Self-Single-Loser tended to score higher than other participants on scales measuring the need to belong and fear of negative evaluation (Leary, 1983). Thus, the choice of MUA may contain information beyond the allocation that is perceived as maximally unfair.

Specifically, our theory suggests that from an individual's choice of MUA, we can infer whether the individual is an entitled, that is, averse to being a loser (the choices of Self-Single-Loser and Self-One-Loser-of-Many), or benevolent, that is, averse to being a winner (the choices of Self-One-Winner-of-Many and Self-Single-Winner). The choice of MUA should also indicate whether these aversions are particularly strong when the individual is a *single* loser or winner rather than one of many losers or winners. The MUA candidates are all extreme allocations. Our theory suggests that individuals' choice of MUA would also predict their unfairness judgments of non-extreme allocations. The following example illustrates this. Consider a 9 unit resource allocated such that one person receives a share of 5, another person a share of 3, and a third a share of 1 (5:3:1). How would this particular allocation be perceived by these three recipients in terms of unfairness? It is possible that they would perceive equal levels of unfairness as they are judging the same allocation event. However, as discussed above, we should expect some individuals to be benevolents and others to be entitleds (Huseman et al., 1987). This means that some individuals would find it more unfair to receive a smaller share while others would find it more unfair to receive a relatively larger share. To operationalize this, we define an individual's *egoistic bias* with respect to a given multi-party allocation as how unfair the allocation is perceived to be when self receives the *worst* share compared to how unfair the same allocation is perceived to be when self receives the *best* share (so the bias is taken to be the difference between these two unfairness judgments). According to our theory, we can infer whether a person is benevolent or entitled from their choice of MUA. Thus, we suggest that:

Hypothesis 2 Egoistic bias should be greater among those who make MUA choices where self is a loser (i.e., Self-Single-Loser and Self-One-Loser-of-Many) than among those who make MUA choices where self is a winner (i.e., Self-One-Winner-of-Many and Self-Single-Winner).

This prediction is based on the benevolent/entitled distinction. However, the MUA theory provides further predictions for allocations with a single winner and single loser, such as the 5:3:1 allocation. Specifically, we expect to find different patterns of egoistic bias within the benevolent and entitled categories. For instance, a high sensitivity to being a single loser should be reflected in a particularly large egoistic bias in the 5:3:1 allocation. Thus:

Hypothesis 3 Egoistic bias should be greater among those who make the Self-Single-Loser choice of MUA than among those who make the Self-One-Loser-of-Many choice.

Similarly, a high sensitivity to being a single winner should be reflected in a particularly low egoistic bias in the 5:3:1 allocation:

Hypothesis 4 Egoistic bias should be smaller among those who make the Self-Single-Winner choice of MUA than among those who make the Self-One-Winner-of-Many choice.

Outline of the Studies

We conducted two separate data collections. Both studies consisted of two tasks. One task was to choose a MUA among the four candidates discussed earlier (i.e., the extreme allocations presented in Table 1). The other task was to rate the unfairness of a non-extreme allocation, either 5:3:1 (in Study 1) or 4:3:2 (in Study 2). The tasks were completed in both negative and positive valence conditions.

As described in detail below, participants in Study 1 made separate ratings of allocation 5:3:1 (i.e., whether their own share would be 5 units, 3 units, or 1 unit). As the analysis focuses on the difference in ratings between receiving the loser share and the winner share, we streamlined Study 2 by asking participants to rate only these two cases, that is, participants were not asked to rate the middle-sized share. As the design and analysis were otherwise similar, we report both studies together below.

Methods

Participants were recruited among US-based users of Amazon Mechanical Turk (mturk.com) to take part in a research survey. Participation was compensated by 0.60 US dollars. Study 1, run in March 2015, was completed by 357 participants (49 % females; age $M = 38$ years, $SD = 13$ years). Study 2, run in July 2015, was completed by 351 participants (49 % females; age $M = 35$ years, $SD = 12$ years).[3]

Participants of Study 1 were presented with a set of six vignettes (see "Appendix" section). Each vignette described how an older lady had decided to allocate resources among three neighbors, one of them being the participant. Three vignettes used a positive valence resource (9 precious vases), which was divided into three shares of different sizes, 5:3:1. These vignettes differed only with respect to which share (5, 3, or 1) that was allocated to self. The remaining three vignettes used a negative valence resource (i.e., replacing 9 precious vases), and used the same share sizes and variation of self's share as in the positive valence case. A within-subjects design was used in which each participant was presented with all six vignettes. The orders between the positive and negative valence cases as well as different sizes of self's share were counterbalanced. No order effects were found. For each vignette, the participant was asked to rate the fairness of the scenario it

[3] For each study, 400 responses were collected. From these samples, we excluded anyone who had not completed every measure or taken part in this set of studies more than once as indicated by their Mturk user ID.

described, using a scale ranging from 0 (not unfair at all) to 100 (worst possible unfairness).

Participants of Study 2 were presented with a set of four vignettes in a within-subjects design. These vignettes were identical to those in Study 1, except for the share sizes (i.e., 4:3:2 instead of 5:3:1). The study included only two vignettes in each of the two valence cases, namely those vignettes where self was allocated either the largest or the smallest share.

In both studies, participants were also asked to make two choices of MUA, one in each valence. The positive resource valence version of the MUA question used a scenario reminiscent of the above-mentioned vignettes, but with some differences such that the two would not be confused with each other. Specifically, the MUA scenario involved 12 vases instead of 9, and four recipients instead of three:

> Suppose for some reason that you and three other persons (here called X, Y, Z) are to *receive* a valuable resource, say 12 identical and quite expensive vases that you have collectively earned. Which of the following scenarios would you find **most unfair**? (a) *All except you receive:* You do not receive any share at all (0 vases), while X, Y, and Z receive equal shares of the valuable resource (4 vases each). (b) *All except someone else receive:* X does not receive any share at all (0 vases), while you, Y, and Z receive equal shares of the valuable resource (4 vases each). (c) *Only you receive:* You receive the entire valuable resource (12 vases), while X, Y and Z do not receive any share at all (0 vases each). (d) *Only someone else receives:* X receives the entire valuable resource (12 vases), while you, Y, and Z do not receive any share at all (0 vases each).

The negative valence version of the MUA task was equivalent to the positive valence version except for being about replacing instead of receiving vases:

> Suppose for some reason you and three other persons (here called X, Y, Z) must *replace* a valuable resource, say 12 identical and quite expensive vases that you have collectively broken. Which of the following scenarios would you find the **most unfair one**? (a) *All except you replace:* You do not have to contribute at all (0 vases), while X, Y, and Z have to contribute equally to replace the valuable resource (4 vases each). (b) *All except someone else replace:* X does not have to contribute at all (0 vases), while you, Y, and Z have to contribute equally to replace the valuable resource (4 vases each). (c) *Only you replace:* You must replace the entire valuable resource (12 vases), while X, Y, and Z do not have to contribute at all (0 vases each). (d) *Only someone else replaces:* X must replace the entire valuable resource (12 vases), while you, Y, and Z do not have to contribute at all (0 vases each).

Following our earlier discussion (see Table 1), the MUA choices were coded as follows. In the positive valence case, response (a) was coded as *Self-Single-Loser,* (b) as *Self-One-Winner-of-Many,* (c) as *Self-Single-Winner*, and (d) as *Self-One-Loser-of-Many*. In the negative valence case, response (a) was coded as *Self-Single-Winner*, (b) as *Self-One-Loser-of-Many*, (c) as *Self-Single-Loser,* and (d) as *Self-One-Winner-of-Many*.

Results

Our first hypothesis was that choices of MUA with a single loser (i.e., Self-Single-Loser and Self-One-Winner-of-Many) should be more common in the negative valence case than in the positive valence case. Table 2 summarizes the frequencies of different MUA choices in the two studies. The pooled data were analyzed. The hypothesis received very strong support; the frequencies were 87 % (95 % CI between 84 % and 90 %) versus 37 % (95 % CI between 33 % and 41 %), $\chi^2(1, N = 708) = 269.28$, $p < 0.001$.

Table 3 summarizes descriptive statistics for the unfairness ratings of the presented allocations as well as descriptive statistics for egoistic bias (derived as the difference in unfairness rating between self receiving the worst share and self receiving the best share). Our hypotheses focus on how egoistic bias could be predicted by choice of MUA. Our data allowed us to make separate examinations of these hypotheses in the positive and negative valence cases. For each valence case, we standardized the data on egoistic bias (i.e., subtracted the mean value and divided by the standard deviation) in each of the two studies, to make the data from the two studies directly comparable. In order to test whether data from the two studies could be pooled, we conducted, for each valence case, a two-way ANOVA of standardized egoistic bias with MUA choice (4 options) and study (2 options) as independent variables. There was a significant main effect of MUA choice both in the positive valence case, $F(3, 700) = 13.33$, $p < 0.001$, $\eta_p^2 = 0.054$, and in the negative valence case, $F(3, 700) = 11.00$, $p < 0.001$, $\eta_p^2 = 0.045$. There was no significant main effect of study nor an interaction between study and MUA choice, for either valence case. We therefore pooled the standardized data from both studies for the analyses of the hypotheses. Figure 1 illustrates, for each valence case, how (standardized) egoistic bias varied between participants who made different choices of MUA. Below we test each hypothesis by comparing the mean values in different groups of participants (defined by the choice of MUA) using independent samples *t* test (adjusted for unequal variances when necessary).

Hypothesis 2 stated that egoistic bias should be greater among those who make a MUA choice where self is a loser than among those whose MUA choice has self as a

Table 2 Choices of maximally unfair positive and negative resource allocations

Valence	Study	Self-Single-Loser (%)	Self-One-Loser-of-Many (%)	Self-Single-Winner (%)	Self-One-Winner-of-Many (%)
Positive	1	27	47	17	8
	2	27	50	11	13
	Total	27	49	14	10
Negative	1	64	8	5	23
	2	65	8	4	24
	Total	64	8	5	23

Total $N = 708$ (357 in Study 1; 351 in Study 2)

Table 3 Descriptive statistics of unfairness ratings

Allocation	Self's share	Positive valence case		Negative valence case	
		Mean	SD	Mean	SD
5:3:1	1	48.29	36.61	65.51	31.16
	3	37.45	32.63	65.81	31.17
	5	37.26	33.91	84.41	24.07
	Egoistic Bias	11.03	30.01	18.90	28.39
4:3:2	2	38.97	30.78	63.91	23.82
	4	33.24	29.84	73.88	27.05
	Egoistic Bias	5.73	20.22	9.97	21.19

Egoistic bias is the difference in ratings between the case of self as a loser and the case of self as a winner. E.g., for allocation 5:3:1 in the positive valence case, it is the difference in ratings between the case where self's share is 1 and the case where self's share is 5

winner. This was supported in the positive valence case ($M = 0.09$, $SD = 1.04$ vs. $M = -0.29$, $SD = 0.77$), $t(390.60) = 5.09$, $p < 0.001$, $d = 0.38$. The negative valence case yielded similar results ($M = 0.13$, $SD = 1.05$ vs. $M = -0.33$, $SD = 0.77$), $t(484.43) = 6.31$, $p < 0.001$, $d = 0.46$.

Hypothesis 3 stated that egoistic bias should be greater than among those who make the Self-Single-Loser choice of MUA than among those who make the Self-One-Loser-of-Many choice. This was supported in the positive valence case ($M = 0.31$, $SD = 1.06$ vs. $M = -0.03$, $SD = 1.02$), $t(382.83) = 3.60$, $p < 0.001$, $d = 0.32$. The negative valence case exhibited a nonsignificant tendency in the same direction ($M = 0.15$, $SD = 1.06$ vs. $M = -0.04$, $SD = 0.96$), $t(509) = 1.25$, $p = 0.21$, $d = 0.18$.

Hypothesis 4 stated that egoistic bias should be smaller than among those who make the Self-Single-Winner choice of MUA than among those who make the Self-One-Winner-of-Many choice. This was supported in the positive valence case ($M = -0.43$, $SD = 0.77$ vs. $M = -0.08$, $SD = 0.73$), $t(170) = 3.04$, $p < 0.001$, $d = 0.45$. Again, the negative valence case exhibited a nonsignificant tendency in the same direction ($M = -0.47$, $SD = 0.82$ vs. $M = -0.30$, $SD = 0.75$), $t(195) = 1.15$, $p = 0.25$, $d = 0.21$.

Discussion

Hegtvedt (2001) pointed out that research studies on groups larger than two are rare in the justice literature and that the impact of structural factors on preferences for allocation principles has been marginally explored (see also Kazemi & Törnblom, 2008, 2014). Our studies contribute toward a remedy of this shortcoming by featuring allocations among persons who are not differentiated by performance. The focus of our research was to investigate a single-item measure of individual differences in perceptions of unfairness: Which allocation does the respondent perceive as maximally unfair? This measure was introduced by Eriksson and

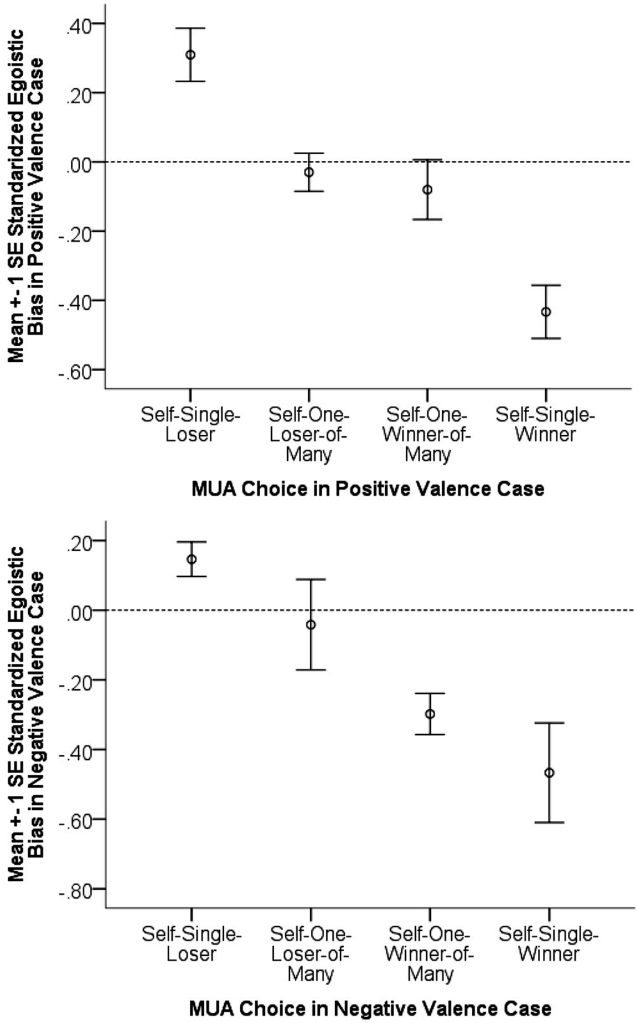

Fig. 1 Standardized egoistic bias in unfairness ratings of an unequal allocation, in the positive valence case (*top*) and the negative valence case (*bottom*)

Simpson (2011). Here, we have made several distinct contributions to the theoretical understanding of unfairness in multi-party allocations. First, we elaborated on the psychological mechanisms that might underlie choices of MUA. Second, we showed how this framework could be extended to negative resource allocations, yielding the prediction that MUAs with a single loser would be more common in the negative valence case than in the positive valence case. Third, we used our theory to draw inferences about an individual from his/her choice of MUA. Based on this theoretical groundwork, we predicted how different choices of MUA would be related to individual differences in the amount of egoistic bias exhibited when people judge the unfairness in a multi-party allocation under varying assumptions of which share is theirs.

Our predictions were supported. First, MUA choices with a single loser were indeed much more common in the negative valence case than in the positive valence case. The basis for this prediction was that total inequality for single loser allocations is higher in the negative valence case than in the positive valence case. Thus, this finding supports the notion that total inequality is an important factor in perceptions of unfairness.

Second, our hypotheses about what can be inferred about individuals from their choice of MUA were generally supported. Specifically, participants who made the Self-Single-Loser choice of MUA tended to exhibit the greatest egoistic bias, and participants who made the Self-Single-Winner choice of MUA tended to exhibit the least (indeed, negative) egoistic bias, with intermediate levels of egoistic bias among those who made the Self-One-Loser-of-Many or Self-One-Winner-of-Many choices of MUA. These patterns were statistically significant in the positive valence case but did not reach statistical significance in the negative valence case. We speculate that people may generally have less experience of multi-party allocations in the negative valence case than in the positive valence case, and therefore, participants might be less consistent in their responses to the negative valence case.

It is worth emphasizing the differences between the two tasks in our studies. The MUA task was a choice among four given allocations, each of which involved four recipients of shares of extreme sizes (either large or zero). The task in which egoistic bias was measured was not a choice task; instead, participants made numerical ratings of the unfairness in several allocations, each of which involved three recipients of shares of three different and non-extreme sizes. Our studies thus demonstrate that individual differences in how unfairness is perceived in multi-party allocations show consistency across very different tasks. The interpretation offered by our theory is that the MUA choice task taps some generally relevant principles of how unfairness is perceived in multi-party allocations. This finding seems potentially important for research in situations where resources are allocated between several parties (e.g., social dilemmas).

Implications for Research on Social Dilemmas

Social dilemmas are situations in which individual outcomes for noncooperative behavior are larger than outcomes for cooperative behavior (favoring the collective interest), regardless of how other members in a collective behave; but if all members adhere to this individually rational behavior, all members will acquire a lower payoff in the end as compared to if all had chosen to cooperate in the first place. Classic types of social dilemmas are the temptations to free ride on others' contributions to a public good and to use more than one's fair share of a common resource (Kollock, 1998; Ostrom, Gardner, & Walker 1994). Such situations entail multi-party allocations of resources. In the case of contributions to a public good, the resource valence is negative (as recipients contribute their own resources), and in the case of common resource usage, it is positive (as recipients take out resources from the common pool for their individual use).

It is well established that there is substantial individual variation in behavior in social dilemmas. The dominant approach to this variation is SVO or social value orientation (e.g., Van Lange 1999). SVO refers to an individual's preference for how resources should be distributed between self and another party, which seems to be a reasonably stable individual difference characteristic. The most common measure of SVO is the triple-dominance measure of social values according to which individuals can be divided into three main categories: individualists, competition-oriented and collaborative. The first two are called proselfs, and the latter are called prosocials in the literature.

Now compare the SVO approach to our MUA framework. The proself–prosocial distinction seems to be related to our conception of entitleds and benevolents. What our work suggests is that for multi-party situations, it is not sufficient to consider this single dimension of individual variation. Specifically, we found that people also seem to put varying emphasis on the unfairness in the extreme ends of the allocation (the "winner" and the "loser"). This seems likely to come into play when a social dilemma has several stages. When one stage has resulted in an allocation of resources, people will vary in their emotional reactions to the outcome. These reactions should influence how people behave in a subsequent stage. In particular, emotional reactions to winners and losers may trigger various positive and negative sanctions. Experimental research on use of sanctions following contributions to a public good indicates that individual variation in use of sanctions is not predicted by a single measure of prosociality (Eriksson, Cownden, Ehn, & Strimling 2014). It may therefore be a very promising line of research to study individual variation in sanctioning behavior in social dilemmas using the MUA framework.

Future Development of MUA Measures

Future research on MUA should include the development of a validated measure. In our studies, we found that choices of MUA in both positive and negative valence conditions could be combined. In the same vein, prior research combined choices of MUA for three kinds of resources: money, goods and status (Eriksson & Simpson, 2011, Experiment 5). In Foa's (1971) classification, money, goods and information are universalistic resources. Contrary to particularistic resources (e.g., love, status and, to a lesser extent, services), the values of universalistic resources (with the exception of information) are not dependent on the identity of the provider or the relationship between the provider and recipient. Further, for money and goods (and, to a lesser extent, information), the amount lost by the giver is equivalent to the amount gained by the recipient (see also Törnblom & Kazemi, 2012). Thus, we can expect that the choice and meaning of MUA for money most likely differ from that of love in multiparty situations due to these two (and other) differences between universalistic and particularistic resources.

It is also possible to vary the MUA question simply by varying the size or amount of the total resource and the number of recipients; this would correspond to how the

SVO measure uses several items that are essentially identical except for the scaling of numbers. Participants could also be asked to compare the four MUA candidates pairwise, instead of just making one choice. A suitably validated multi-item MUA scale should be a valuable addition to the toolbox of social justice researchers. It should complement (and be compared against) other measures of individual dispositions with regard to inequality, such as the above-mentioned SVO, measures of justice sensitivity (e.g., Schmitt, Neumann & Montada, 1995) and existential guilt (Montada, Schmitt, & Dalbert 1986, p. 126; see also Hoffman, 1976).

Appendix: Vignettes

Positive Valence

Imagine that your elderly neighbor, "Mrs. P," has just died. She had no children, but there were three neighbors (you, "A" and "B") who used to take turns taking care of her. You have never met the other two neighbors before and have no relation to them. Mrs. P used to say that the three of you would not learn her definitive evaluation of your efforts and willingness to help her until after her death. Soon after Mrs. P's death, all three of you are called to a meeting with her attorney who will read out the old lady's evaluation of you as part of her will. The attorney says that the only things of value in Mrs. P's estate are 9 identical precious vases. According to the will, the 9 have to be discreetly distributed among you as follows: "A" receives 1 vase, "B" receives 3 vases, and you receive 5 vases.

[The other two conditions presented other allocations in the last sentence, either 3:5:1 or 5:1:3.]

Negative Valence

Imagine that your elderly neighbor, "Mrs. P," needs help moving a cupboard that contains 9 identical precious vases. Three neighbors (you, "A" and "B") help her. You have never met the other two neighbors before and have no relation to them. Unfortunately, the three of you manage to drop the cupboard while moving it so that all 9 vases break. Through her attorney, Mrs. P demands that the three of you replace the vases. The attorney informs you that Mrs. P has requested that "A" must replace 1 vase, "B" must replace 3 vases, and you must replace 5 vases.

[The other two conditions presented other allocations in the last sentence, either 3:5:1 or 5:1:3.]

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