

Reference Points, Perceived Procedures, and Fairness

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This study investigates whether perceived procedures matter for the fairness of an allocation. In an experimental setting, individuals have the option to choose between allocations that yield the same payoffs to all individuals, but are achieved by assigning different objects to different individuals. In one instance that allocation can be interpreted as being based on a procedure that reduces inequality, in the other case, the allocation can be interpreted as being based on a procedure that introduces inequality. Although the actual procedure of assigning goods is the same in both cases, the reference or starting point for the two outcomes and the allocation yielding the final payoff allocation is different. The results shed light on the tradeoff between distributional and procedural justice, and on the perception of implicit procedural aspects of allocations. The saliency of reference points therefore becomes critical for the determination of the fairness of an allocation.

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1. Introduction

It is becoming increasingly evident that perceptions of fairness are not only based on outcomes, let alone in a self-interested way, but that factors beyond payoffs matter, such as reciprocity, intentions, causality, and additional fairness criteria.³ This paper adds to this evidence by showing that *identical* payoff allocations are viewed *differently* depending on how they were achieved when chosen from the *same* set of possible payoff allocations. Here, the choice of one identical allocation over another implicitly and endogenously determines a different procedure with different fairness properties – as will be shown below. These different “perceived” procedures allow a distinction between distributive and procedural aspects of fairness providing strong support for the importance of procedural fairness.⁴ The procedural fairness aspects considered here are closely tied to the starting or reference point from which the final outcome is achieved.⁵

Reciprocal behavior in terms of reward or punishment at the expense of one’s own payoff and/or efficiency is generally used to infer the intentions that are attributed to other players based on their observed actions. The situations considered in this paper do not have any relevant sequential structure, such that reciprocity is irrelevant. Nevertheless, different choices can be due to different intentions. In this paper, intentions are inferred from choices, because the two choices of interest yield the same payoff distribution. The same payoff distribution could have been achieved through a different allocation, so, systematic and significant differences in choice behavior must be due to salient aspects of the two choices.⁶ The two choices can be distinguished by a starting allocation or reference point in which only goods are distributed and the final allocation that is achieved by also allocating an indivisible amount of money. The former refers to distributive aspects, the latter to procedural aspects.

There is ample evidence, starting with Thaler (1980), that changes from a reference points are judged differently depending on whether they constitute gains or losses (see Tversky and

³ For the role of reciprocity see Rabin (1993), Dufwenberg/Kirchsteiger (2004), Falk/Fischbacher (2003), as well as the reciprocity factor in Charness/Rabin (2002) or the role of reciprocity, for instance, in Bereby-Meyer/Niederle (2005). See Herreiner (2008) for the relevance of envy freeness for the choice of two identical payoff distributions. The recent literature, substantially influenced by Bolton/Ockenfels (2000) and Fehr/Schmidt (1999), and responses to these such as Engelmann/Strobel (2004), has focused mostly on aspects of distributional justice. Bolton/Ockenfels (2005) and Bolton et al (2005) provide first steps towards a unifying approach to distributional and procedural justice.

⁴ Rawls (1971) and Nozick (1974) are protagonists for the two basic approaches to problems of fairness. Rawls’s Theory of Justice (1971) propagates a mostly distributional approach, where the properties of the achieved allocation determine its fairness. Nozick (1974) instead bases the fairness evaluation of an allocation on the procedural aspects of how an allocation was achieved. For an overview of the close connections between the different distributional and procedural fairness concepts see Brams/Taylor (1996) and Thomson (2007).

⁵ Bolton et al (2005) suggest a model that incorporates a reference point (and a potentially biased random procedure) into a social utility model, thereby implicitly addressing aspects of procedural justice within a distributive utility model. Although reference point and procedural justice are closely connected also here, it is not the deviation from equal division or some other reference allocation implied by another player’s choice of random procedure that matters as in Bolton et al (2005), but rather the *combination* of reference point and procedure chosen by individuals – in fact there is no randomness here.

⁶ Andreoni et al (2002) find that “alternatives that were *not* chosen affect the evaluation of fairness of those alternatives that actually are chosen,” which implies that not only “the intentions of subject to play fairly [...] matter[s], but also the opportunities to play fairly” – a result strongly supported by Bereby-Meyer/Grosskopf (2008), where the availability of different irrelevant alternatives changes the perception of fairness of the chosen outcome.

Kahnemann, 1991, for the most prominent theory addressing the endowment effect). What this paper posits is that changes from reference points are perceived differently depending on whether they generate equality or inequality. As Blount (1995) has shown causal attributions are relevant for how individuals value different outcomes, in particular from a distributive and procedural justice point of view. Dana et al. (2007) show that the more transparent or certain the causal attribution of the fairness of an outcome the more prevalent other-regarding behavior. They note, in line with findings by others (...), that a fraction of the population, approximately one third, chooses fair outcomes no matter how attributable these choices are – altruism for altruism’s sake or an innate preference for fairness. Others, such as Akerlof/Kranton (2001) and Murnighan et al (1999) have shown that decisions about fair allocations are closely related to the goal of constructing or maintaining a positive self-image; choices are therefore not (only) determined by others’ perceptions, but by one’s own perception of a certain behavior. Therefore, even if

- no reciprocation is possible (third-party decisions or dictator-like setup),
- nobody can directly attribute a given choice to a specific (possibly anonymous) individual,
- nobody else is affected by one’s choice (survey),

individuals make choices that reflect important aspects about the available options, in particular their fairness properties. In this paper available allocations are designed such that some of these fairness properties emerge based on the final allocations chosen.

This study is based on simple allocation scenarios where four indivisible objects (three goods plus money) have to be divided among three individuals. In two settings the allocation decision is taken by an impartial arbiter making a “fourth”-party decision for the three individuals affected by the decision, once in the framework of paid lab experiments and in the other case in an unpaid survey.⁷ The results are similar and significant in both cases, showing that independent arbiters prefer allocations that suggest that their decisions have an equalizing effect over allocations with equal reference points that imply an inequality-generating procedure.

The same scenarios were also tested in a paid lab experiment where the three individuals involved had to suggest allocations and subsequently settle on one. Here the results are markedly different, mostly due to a possible self-serving bias this treatment introduces. The equal reference point is chosen more frequently and a random procedure is used to determine the final allocation. Nevertheless, the results in this case also support the claim that procedural aspects are highly relevant for the choice of the final allocation – the equal reference point is chosen more frequently only in conjunction with a random procedure designed by the individuals.

2. Experimental Design

Subjects were Loyola Marymount University students who participated during the 2007/2008 and 2008/2009 academic year. They took part in a total of 12 different treatments with within-subject design:⁸

⁷ See Konow (2008) for an in-depth analysis and discussion of the impartial arbiter role and for references to similar survey-based experimental work.

⁸ The number of observations indicates the number of choices where each individual received one good; other allocations were chosen, although much less frequently – see the later discussion. The IA and SD lab experiments involved a trial round for which data is available too, that has been excluded here). The meaning of “equal” and “unequal” treatment will be explained in due course. See appendix 1 for instructions for the different treatments.

- Six independent arbiter (IA) treatments based on a questionnaire.
(Three “equal” treatments with 160 participants, three “unequal” treatments with 117 participants; each with 7 scenarios yielding a total of 1446 individual observations)
- Three independent arbiter (IA) treatments in paid lab experiments.
(Two “equal” treatments with 31 participants, one “unequal” treatment with 12 participants; each with 7 scenarios yielding a total of 269 individual observations)
- Three “Suggest & Discuss” (SD) treatments in paid lab experiments.
(Two “equal” treatments with 54 participants, one “unequal” treatment with 25 participants; each with 4 scenarios yielding a total of 312 individual and 104 group observations)

Students in the questionnaire sessions were recruited through a subject pool in introductory Economics classes, receiving class credit for their participation. Subjects in the lab experiments were recruited through the lab recruitment website for one-hour experimental activities, guaranteeing a \$5 show-up fee. The average total pay for all lab experiments was approximately \$20. The IA lab experiment was run through a computer interface (ZTree) with an anonymous stranger matching for subsequent rounds. The SD lab experiment was run as pen-and-paper experiment first eliciting subjects’ proposed allocations and then (stranger-)matching them face-to-face to agree on an allocation. In the IA lab experiment individuals had 4 minutes to determine an allocation; in the SD lab experiments groups had at most 8 minutes to agree upon an allocation. In the IA lab experiment individuals were paid the show-up fee and in each round based on three separate decisions by others acting as independent arbiters (and they themselves determined the payoffs of three other individuals by making one allocation choice) – an experimental currency unit (ECU) did correspond to \$0.02. In the SD lab experiment individuals were paid in each round based on the allocation they settled on in their group, where an ECU unit was worth \$0.10.

The following scenario illustrates the basic setup and relevant choices for all scenarios used. There are three individuals (1-3) among which three indivisible goods (A-C) and an indivisible amount of money (M) have to be distributed. Goods are valued differently by the three individuals; money is worth the same to all individuals. The individual good values and money were presented to the individuals in tables like the one below, where goods and money are valued in the same ECUs (i.e., for instance, getting good B is worth as much for person 3 as is getting the money amount of 5 ECUs):⁹

	A	B	C	M=5
1	45	15	40	
2	30	45	25	
3	50	5	45	

The two most frequently chosen allocations and focal points of the analysis here are:

	A	B	C	M=5
1	45	15	40	
2	30	45	25	
3	50	5	45	*

	A	B	C	M=5
1	45	15	40	*
2	30	45	25	
3	50	5	45	

⁹ See Herreiner/Puppe (2008) for the inspiration of these experiments.

In the left case, person 1 gets good A, person 2 receives good B, and person 3 has good C and the 5 ECUs. In the right case, person 1 gets good C and the extra 5 currency units, person 2 has good B, and person 3 receives good A. These allocations give persons 1 and 2 each 45 ECUs, and person 3 gets 50 currency units – the payoffs are identical in both allocations.

The left allocation has an equal (goods) allocation as reference or starting point; distributing the money generates inequality – this allocation is referred to as the *Equal Reference Point* allocation (or also D3). Assuming that subjects care about fairness and that equality is an expression of fairness in this experiment, in choosing the left allocation, the focus is on the distributive aspect of fairness of the goods allocation, not on the procedural aspect of distributing the money.

The right allocation starts with an unequal (goods) allocation as reference point; distributing the money generates equality in this case – this choice is referred to as the *Equalizing Procedure* allocation (or also P1). Again, assuming that fairness motivates subjects' choices and positing equality as a fairness goal here, choosing the Equalizing Procedure allocation implies that the focus is on the procedural aspect of equalizing the allocation by assigning the money appropriately and not on the unequal starting point.

By choosing one of these two allocations, decision makers implicitly weigh the procedural aspects of generating (in)equality by assigning the money against the (in)equality of the reference point of the goods allocation. These two aspects are necessarily linked in this case, with an unequal final allocation and an indivisible money amount: starting with an equal allocation implies that assigning the money makes individuals less equal and starting with an unequal allocation allows the money to be used to make payoffs more equal. Obviously, there is no explicit procedure here with which goods and money are assigned, but the choice between these two allocations can be interpreted as the choice between a perceived procedure and corresponding reference point. Written comments and explanations will substantiate this interpretation.

In the two (IA) experiments individuals had to make an allocation choice in seven different scenarios. In the three “equal” treatments the seven scenarios considered were as follows:

	A	B	C	M=5		A	B	C	M=12		A	B	C	M=2		A	B	C	M=8
1	45	15	40		1	42	28	30		1	48	6	46		1	45	18	37	
2	30	45	25		2	32	42	26		2	28	48	24		2	30	45	25	
3	50	5	45		3	54	4	42		3	50	2	48		3	53	2	45	
1	42	21	37	M=5	1	45	12	43	M=2	1	42	24	34	M=8					
2	32	42	26		2	30	45	25		2	32	42	26						
3	47	11	42		3	47	8	45		3	50	8	42						

These are called “equal” treatments because assigning good A to person 1, B to person 2, and C to person 3 gives the same equal payoff to all. The “unequal” treatments are basically the same with the difference that the payoff for one individual is changed in one of the two focal allocations (changes in italics):

	A	B	C	M=5		A	B	C	M=12		A	B	C	M=2		A	B	C	M=8
1	45	15	40		1	<i>44</i>	28	30		1	48	6	46		1	45	18	<i>39</i>	
2	30	45	25		2	32	42	26		2	28	48	24		2	30	45	25	

3	50	5	46
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3	54	4	42
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3	50	2	49
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3	53	2	45
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	A	B	C	M=5
1	42	21	37	
2	32	43	26	
3	47	11	42	

	A	B	C	M=2
1	46	12	43	
2	30	45	25	
3	47	8	45	

	A	B	C	M=8
1	42	24	34	
2	32	44	26	
3	50	8	42	

These unequal treatments make the Equal Reference Point allocation less of a focal point and therefore allow to test whether the choice of the Equal Reference Point allocation is favored by its easy identification in the payoff matrix.

In all IA treatments the seven scenarios were presented in the order shown above, but the treatments differed in the permutations that were used for each scenario (to make sure that no order effects within each table affected the choices, see appendix 2 for the permutations used). Based on the results in the IA questionnaire treatment, in the SD “equal” treatments only scenarios 1, 3, 4, and 7 from the list above were considered:¹⁰

	A	B	C	M=5
1	45	15	40	
2	30	45	25	
3	50	5	45	

	A	B	C	M=2
1	48	6	46	
2	28	48	24	
3	50	2	48	

	A	B	C	M=8
1	45	18	37	
2	30	45	25	
3	53	2	45	

	A	B	C	M=8
1	42	24	34	
2	32	42	26	
3	50	8	42	

with the corresponding “unequal” treatment for scenarios 1, 3, 4, and 7 from the second list above.¹¹

In all treatments, subjects were asked to provide a written explanation for the rationale of their individual (and group) choices.

3. Results

The results of the IA treatments can be summarized as follows:

Independent Arbiter	Questionnaire		Lab Experiment	
	“Equal” Treatments	“Unequal” Treatments	“Equal” Treatments	“Unequal” Treatments
Equal Reference Point	161	137	35	15
Equalizing Procedure	352	233	68	11
Ratio	2.19	1.70	1.94	0.83
P-Value	0.0000	0.0000	0.0007	0.2786

In the IA treatment the Equalizing Procedure is chosen significantly more frequently than the Equal Reference Point allocation, no matter whether participants were paid or not. Contrary to expectations, this effect is more pronounced for the “equal” treatments (where the equal

¹⁰ The results were the strongest in these four scenarios.

¹¹ In the IA lab experiment and the SD lab experiment a trial period was run before the experiment itself started. The scenario used in that trial period is shown in the respective instructions in appendix I. Data from this scenario is not included in the analysis, because the characteristics of the trial scenario were purposefully chosen to be somewhat different from the ones considered here.

reference point was easier to identify) than for the “unequal” treatments (where results are not significant in the “unequal” treatment)

The questionnaire data have a sufficient sample size to run regressions to investigate what aspects contribute to the significantly more frequent choice of the equalizing procedure. Three independent variables have a barely significant effect on the allocation chosen – the amount of money (M) being assigned (“money), the equal payoff level of the Equal Reference Point goods allocation (“eqpay”), and a dummy variable for the “equal” treatment (“same”):

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Probit regression, reporting marginal effects          Number of obs =    883
                                                    LR chi2(3)      =    5.31
                                                    Prob > chi2     = 0.1501
                                                    Pseudo R2      = 0.0047

Log likelihood = -561.89199

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alloc	dF/dx	Std. Err.	z	P> z	x-bar	[95% C.I.]
money	.006434	.0065151	0.99	0.323	5.74066	-.006335	.019203	
eqpay	.0149738	.009951	1.50	0.132	44.2661	-.00453	.034477	
same*	.0566757	.0324136	1.75	0.079	.580974	-.006854	.120205	
obs. P	.6625142							
pred. P	.6633034	(at x-bar)						

(*) dF/dx is for discrete change of dummy variable from 0 to 1
z and P>|z| correspond to the test of the underlying coefficient being 0

The likelihood of choosing the equalizing procedure is increased only to a small and insignificant extent by the amount of money the independent arbiter allocates in addition to the goods and the payoff level to all individuals in the equal goods reference point. Similarly, the likelihood of choosing the equalizing procedure is somewhat enhanced in the case of the “equal” treatments, but also this effect is not significant. All three variables together (as well as other variables) explain the observed choices only to a small extent.

Categorization and a detailed analysis of the written comments and explanations provided in all IA treatments will shed light on the results [to be added shortly...]

The results look very different for the SD treatments – in this case, at first sight, no support can be found for the importance of the equalizing procedure:

Suggest & Discuss	Individuals		Groups	
	“Equal” Treatments	“Unequal” Treatments	“Equal” Treatments	“Unequal” Treatments
Equal Reference Point	41	8	16	5
Equalizing Procedure	31	35	9	9
Ratio	0.76	4.38	0.56	1.80
P-Value	0.1444	0.0000	0.1148	0.2120

Here, something very different is going on, that cannot be captured in the above summary table. Individuals mostly make “fair” and “self-serving” allocation suggestions and then decide between these similar but incompatible suggestions, often resorting to random mechanisms. It matters decisively which player role a subject finds herself in for the allocation a subject suggests. Considering all equal reference goods allocations where good A is given to player 1, good B to player 2 and good C to player 3 and denoting them D1, D2, and D3 depending on who

receives the money; and similarly considering all goods allocations corresponding to the equalizing procedure where good C is given to player 1, good B to player 2, and good A to player 3 and denoting them P1, P2, and P3 depending on who receives the money, the following picture emerges (for all scenarios combined):

		Player 1	Player 2	Player 3	Σ Players	Group
D1	(A,B,C,1)	58	5	8	71	33
D2	(A,B,C,2)	11	54	2	67	27
D3	(A,B,C,3)	5	9	35	49	21
P1	(C,B,A,1)	18	17	31	66	18
P2	(C,B,A,2)	0	11	0	11	3
P3	(C,B,A,3)	1	1	10	12	1
	%	87	93	82	87	95

where the columns indicate what players suggest in the roles of player 1, 2, and 3 respectively, for all three roles combined, and what the group settles on. Obviously, there are other allocations, but as the last row shows, these six allocations make up the majority of all allocation decisions.

It is obvious that the most frequently chosen allocation (58+54+35=147) is the equal reference goods allocations (grey shaded, top half) where each player suggests to allocate the goods such that payoffs are equal and additionally to give the money to herself. In more than one third of these cases players explicitly describe this as their rationale in their written explanations (55), whereas more than 75% of these individuals (a total of 112, including some of the 55) state that they tried to equalize payoffs or make them as fair or close as possible.

It is noticeable that D3 is chosen significantly less frequently by player 3 than D1 and D2 are chosen by players 1 and 2 respectively (P-value of 0.0078). However, this is more than compensated by player 3's choice of P1 – yielding the same payoff allocation that gives player 3 the higher payoff and the other two a lower payoff. The combined choices of D3 and P1 by player 3 are more frequent (66) than the choices by players 1 and 2 of D1 and D2, but not significantly (P-value of 0.1277).

It is clear that P1, i.e. the equalizing procedure has appeal beyond the self-serving goals of player 1. It is chosen significantly more frequently than any other non-self-serving allocation by the other 2 player types.¹² In particular, player 3 suggests this allocation where the money is given to player 1 – player 3 can assure himself a higher payoff whilst at the same time compensating player 1 for the shortfall in payoff: an allocation that is self-serving and magnanimous at the same time. This choice pattern speaks strongly to the importance of a positive self-image and explains why P1 is chosen almost as frequently as D3 by player 3. Overall, individuals suggest in 115 cases that player 3 should be receiving the higher payoff, whereas the higher payoff goes to player 1 or 2 on average in 69 cases – a significant difference with a P-value of 0.0004. So, the equalizing procedure makes the choice of D3 less likely than D1 and D2, but overall it enhances player 3's payoffs, because the perceived procedural aspects of this allocation make it more attractive than the other focal allocations.

¹² In 48 cases, whereas the other non-self-serving allocations (money given to someone else) are chosen in 13, 13, 14, 11, and 2 cases: P1 is chosen on average almost five times as frequently. This is significant for every individual comparison and also the average at a P-value < 0.0001.

A similar pattern can be observed at the level of group decisions. D3 is chosen less frequently than D1 and D2, but the combined choices of D3 and P1 are more frequent than the choices of D1 and D2 (P-value of 0.0843). Overall, in a total of 81 cases one of the three equal goods allocations is chosen, D1-D3, whereas only in 22 cases one of the allocations P1-P3 is chosen. More starkly, in 81 cases an allocation giving one player more and two other players the same lower payoff is chosen through an equal reference allocation, whereas only in 18 cases the same (possibly permuted) payoff allocation is chosen through the equalizing procedure. The written explanations make clear what is happening – in 33 of the 88 cases players chose the equal goods allocation and then picked a randomizing procedure to allocate the money (many of them using Rock-Papers-Scissors and often explicitly stating so).

Over time the choices of D1-D3 by individuals become more frequent at the expense of *all* other allocations, although the number of players suggesting P1 decreases the least. The number of players 1 suggesting D1 increases by 20% on average every round, the number of players 2 suggesting D2 increasing by 16%, and the number of players 3 suggesting D3 by just over 50% on average per round. The same is true also at the group level, where the allocations D1 and D3 are chosen at an increasing rate, whereas all other allocations are chosen less frequently over time.

[differences between different versions]

[switching behavior for individuals]

The only other allocation suggested with a non-negligible frequency is the utilitarian allocation, where the goods are given to the individuals who value them the most and in most of the cases (but not all) the money is then given to individual 1 who does not receive any good. The utilitarian allocation is suggested most frequently in the IA questionnaire treatments and least frequently in the SD lab experiment [numbers]. The more anonymous/abstract the consequences of the allocation, the more the utilitarian version of efficiency matters, the more individuals are affected or confronted by the choices the more fairness aspects dominate over maximizing the payoff sum.

4. Conclusions

The overall picture that emerges is that players care about procedural aspects of fairness, even if they are only implied by the choice of an allocation. They care about this aspect whether they are affected by their choice or not. For independent arbiters this leads to a significantly more frequent choice of the Equalizing Procedure over the Equal Reference Point allocation. It is conjectured [proof? Explanations?] that this is because subjects feel responsible for the “nice” properties of the procedure used to determine the final allocation thereby positively influencing their self-image. For individuals that find themselves in the role of one of the affected players, the results are influenced by the fact that the self-serving allocation of the money dominates general distributive or procedural aspects, although it does not eliminate them. The fair procedure that emerges in this context is the battle-tested and well-established one of randomization.

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Appendix I: Instructions

Independent arbiter (IA) treatments with questionnaire:

There are three goods to be distributed: A, B, C (columns), to three individuals: I, II, and III (rows). The goods cannot be split or assigned to more than one person. All goods need to be given to someone. The value each good has for the three individuals is shown in the matrix below.

There is also a money amount M that has to be given to one of the three individuals. The value of the money is the same for all individuals and is indicated in the header of the last column below. The money has to be given to someone. The money amount cannot be split between individuals; i.e. one of the three individuals gets the whole amount, the others get no money.

Your task is to determine the allocation of goods and money to individuals that you think all three individuals would be willing to accept.

Below, there are 7 different problems. Consider them as independent problems involving different individuals and different goods. Do *not* compare or relate your answers to different problems. Work on each problem separately.

Circle the entries in each matrix to indicate who receives which good (only one circle per column) and indicate who gets the money M by placing an “x” in the appropriate cell in the last column (exactly one “x” – you have to give M to someone, but cannot give it to more than one person). Please provide a short explanation for your choices next to each matrix.

Problem 1:

	A	B	C	M=5
I	45	15	40	
II	30	45	25	
III	50	5	45	

... followed by the remaining 6 scenarios, scenario 2 on the bottom of the first page, the rest on the second page.

Independent arbiter (IA) treatments in paid lab experiments.

Introduction 1

In this experiment, you have been asked by three individuals for help in deciding how to divide three goods A, B, and C, and a certain amount of money between them. **Your task is to determine the allocation of goods and money to individuals that you think all three individuals are willing to accept.**

The three individuals tell you how much they like/value each good and you know how much money there is. You will be given that information in a table showing the value of each good and the money for the three individuals.

You cannot split goods between individuals. Each good has to be given to one person only, but you can obviously give different goods to different people. The money cannot be split either, the whole amount has to be given to one person. Your task will be to decide who to give what to so that all three individuals are willing to accept your decision.

You have 4 minutes to take a decision in each round. Three participants in this experiment will be paid the payoffs based on your distribution decision (and you will be paid based on three other participants' decisions - you are one of the three individuals for these individuals' decision).

If you do not make a suggestion within 4 minutes then the three individuals will not receive any payoff that round. You will be taking decisions in 7 rounds. Each of your decisions is going to benefit a different set of three individuals. We will start with a trial round to familiarize you with the situations you are going to make decisions in.

Round 1 of 7 Remaining time [sec]: 239

The table below shows how much each individual values each good. The last column shows how much money there is.

	Good A	Good B	Good C	Money
Player 1	45	15	40	5
Player 2	30	45	25	5
Player 3	50	5	45	5

Please make your selection below - show how you divide the goods between the three individuals. Indicate which person receives good A, which individual gets good B, who gets good C, and who you give the money to.

You have at most 4 minutes to make a decision. Once you have made your selection, click "OK".

Good A	Good B	Good C	Money
<input type="radio"/> Player 1	<input type="radio"/> Player 1	<input type="radio"/> Player 1	<input type="radio"/> Player 1
<input type="radio"/> Player 2	<input type="radio"/> Player 2	<input type="radio"/> Player 2	<input type="radio"/> Player 2
<input type="radio"/> Player 3	<input type="radio"/> Player 3	<input type="radio"/> Player 3	<input type="radio"/> Player 3

“Suggest & Discuss” (SD) treatments in paid lab experiments.

Three players form one group: player 1, player 2, and player 3. The experiment has four rounds. You are matched with different individuals every round.
 In each round there are three goods to be distributed: Good A, Good B, Good C, and there is also a certain amount of Money.
 All goods need to be given to someone. The value each good has for the three individuals is shown in the matrix below.

You are told which player you are.

Round 0:

	Good A	Good B	Good C	Money=5
Player 1	38	31	31	
Player 2	33	38	29	
Player 3	50	5	38	

You receive a record sheet. Indicate Date and Time and your Participant ID.

I suggest the following division

	Good A	Good B	Good C	Money:_____
Player				

Fill in your half-page records sheet. Copy information to large record sheet.

Return half-page record sheet to the front.

Then meet in group.

One person per group get the group record sheet from the front desk.

	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8	Group 9
Player 1	1	4	7	10	13	16	19	22	25
Player 2	2	5	8	11	14	17	20	23	26
Player 3	3	6	9	12	15	18	21	24	27

- Fill in IDs for each player .
- Indicate what division you agree upon.
- Explain why.
- Return Group Record Sheet.
- Once everybody is done we move to the next round.

For both lab experiments the appropriate ECU/\$ exchange rate was written on the board in large letters and announced at the end of the introduction. Also the time limits for making an allocation choice were emphasized at the end of the introduction for both lab experiments. Students had and used the opportunity to ask questions during the introduction by raising their hand.

Appendix II: Permutations

Each IA treatment consisted of seven scenarios in the same order. The instructions and scenarios were copied onto paper of different colors for each treatment.

The “equal” treatments of the questionnaires were on paper of cyclam (C), purple (P), and blue (B) color; the numbers indicate the order of the scenarios. A total of 10 different versions were employed in the different treatments – row 2 in the table below shows which rows (individuals = numbers) and/or columns (goods = letters) were swapped in a specific version relative to version 0, in which all tables in the text are shown.

Vers 0	Vers 1	Vers 2	Vers 3	Vers 4	Vers 5	Vers 6	Vers 7	Vers 8	Vers 9
	1-2	2-3	3-1-2	A-B	A-C	C-A-B	1-2 B-C	2-3 A-C	1-3
C1	C5		C4	C2		C3			
	C6			C7					
P1	P2	P6		P7	P3		P5		
P4									
B1		B4		B7	B6			B3	B2
								B5	

The “unequal” treatments were on salmon-, yellow-, and orange-colored paper, where the permutations correspond to the “equal” treatment ones with S=C, P=O, B=Y.

The two “equal” treatments of the lab experiments were on purple- and blue-colored paper; the “unequal” treatment was on cyclam-colored paper.

The SA treatments were based on the same permutations, using only scenarios 1, 3, 4, and 7, with the “equal” treatments being purple and blue, and the “unequal” treatment being salmon.