Adverse Impact of Fairness on Efficient Outcomes of Resource Allocation Decisions

Lars-Olof Johansson
Mathias Gustafsson
Lars Olsson,
Tommy Gärling
Göteborg University, Sweden

Two experiments were conducted to investigate the impact of fairness on the efficiency of resource allocation decisions. In Experiment 1 participants allocated payoffs to one privileged and one unprivileged group in a multi-stage decision task. Conflicts between fairness and resource preservation were induced. Self-interest was varied by awarding participants a high or low bonus if a majority of group members voted for it. Fairness was varied at three levels as differences in group allocations. An adverse impact of fairness on efficient resource use was found. In order to distinguish between effects of differences in and sum of group payoffs, fairness and goodness of allocations were directly rated in Experiment 2. The results showed that participants based fairness and goodness ratings on differences although an influence of the sums was discernible when growing larger. It was concluded that the impact of fairness is primarily due to participants’ desire to minimize differences between privileged and unprivileged groups.

Keywords: Resource allocation, fairness, self-interest, efficiency, goal conflict, social dilemma

In decisions about how to allocate resources among groups of people, different goals are frequently in conflict. Decision makers can pursue one goal, ignoring other goals, or they can try to find compromises between goals leading to that none is optimized. Political decision making is an arena where such goal conflicts appear to be particularly salient (Johansson, Gustafsson, Falkemark, Gärling, & Johansson-Stenman, in press).

Correspondence: Lars-Olof Johansson, Department of Psychology, Göteborg University, P. O. Box 500, SE-40530 Göteborg, Sweden. Ph.: (voice) +46 (0)31 773 4696, (fax) +46 (0)31 773 4264. E-mail: Lars-Olof.Johansson@psy.gu.se
When self-interest goals are in conflict with collective goals, these conflicts share the characteristics of social dilemmas (Dawes, 1980) in that (i) the payoff for each individual to act in self-interest (called defection) is higher than the payoff for acting in the interest of the collective (called cooperation) regardless of what others do, but (ii) all individuals receive a lower payoff if all defect than if all cooperate. Previous research has examined several factors that affect cooperation in social dilemmas (Komorita & Parks, 1995; Ostrom, 1998). One such factor is changes in the payoff structure (Komorita, 1976; Messick & Liebrand, 1995), another communication (Dawes, McTavish, & Shaklee, 1977; Jorgenson & Papciak, 1981; Liebrand, 1984). Other factors dependent on communication, such as increased identifiability (Fox & Guyer, 1978) or group identity (Brewer & Kramer, 1986), have also been found to influence cooperation. Of particular significance for the present research is the demonstration that the activation of fairness norms increases cooperation (Eek, Biel, & Gärling, 1998, 2001a; van Dijk & Wilke, 1994, 1995; von Borgstede, 2002).

An example of a social dilemma is the common pool resource (CPR) dilemma (Gardner, Ostrom, & Walker, 1990) characterized by the existence of (i) a resource pool of separable and indistinguishable units that are subtractable so that a unit taken by one group member is not available to another, and (ii) a group of individuals who are interested in obtaining units from the resource for their private consumption. CPR dilemmas induce a conflict between individual and collective interests. A rational strategy for each individual is to take as much as possible from the common resource, but if applied by all or most individuals, this strategy will lead to the depletion of the resource.

Social dilemma research has focused on the conflict between self-interest or greed (G) and optimal use of the resource or efficiency (E) (Komorita & Parks, 1995; Ostrom, 1998). Fairness (F) is a third motive that influences decisions in social dilemmas (Eek, Biel, & Gärling, 1997, 2001b; van Dijk & Wilke, 1994, 1995; von Borgstede, 2002), in bargaining games (e.g., the dictator and ultimatum games) (Guth & Huck, 1997; Guth & Tiez, 1990), and in principal-agent problems (Gustafsson, Gärling, & Fujii, 2002). (Wilke, 1991) proposed the GEF or constrained-egoism hypothesis stating that these three motives together influence the decisions made by individuals with regard to the use of a common resource. Greed is assumed to be the strongest motive that may be constrained by efficiency or fairness.

Some recent research (Eek & Gärling, 2002) suggests that fairness may be a stronger motive than assumed by the GEF hypothesis. A consequence is perhaps that fairness dominates efficiency. The possibility that fairness has negative impact on efficient resource management was demonstrated in a survey of politicians (Johansson et al., in press) as well as in laboratory experiments (Johansson, Gustafsson, & Gärling, 2002). Similar results were obtained by (Mitchell, Tetlock, Mellers, & Ordonez, 1993).

Previous social dilemma research has assumed that fairness considerations lead to increased cooperation and more efficient resource use. The present study investigates resource allocation decisions when there are conflicts between fairness and efficiency. A distinction is thus made between fair allocation to groups leading to depletion of resources and decreased cooperation, and the need for efficiency, leading to preservation of a resource and increased cooperation.
In (Johansson et al., 2002) self-interest was a third motive, not related to fairness or efficiency. In contrast, in the present two experiments self-interest is related to fairness. Experiment 1 entails the multistage allocation decision task employed by (Johansson et al., 2002). In this task the allocation decisions have consequences for one privileged and one unprivileged group. The decision maker/allocator receives a bonus if the allocation is approved by a majority of members of these groups. Fairness is systematically varied by changing the differences in the payoffs to the privileged and unprivileged groups. If the allocation decisions maximize fairness, the resource will be depleted. The task is thus similar to the ultimatum game (Güth & Huck, 1997; Güth & Tiez, 1990) in that the payoff to the decision maker depends on approval by those affected by the decision. Unlike the ultimatum game, it is however not a zero-sum game. As in a CPR dilemma (Gardner et al., 1990) a scarce resource is managed, although the interdependence structure between the decision maker and those affected by the decision is not identical. In Experiment 2, a direct test is made of participants’ preferences for different allocations of resources to a privileged and an unprivileged group. The difference in payoffs for the groups and the total payoff to each are varied in a factorial design.

Experiment 1

The primary aim of Experiment 1 is to investigate the hypothesis that fairness has an adverse impact on the efficient outcomes of resource allocation decisions, thus counteracting preservation of the resource. Fairness is defined as the differences in payoffs to one privileged and one unprivileged group. More depletion of the resource is expected when fairness is low than when it is high. An additional aim of Experiment 1 is to test the hypothesis that greed (i.e., increases in own payoff) strengthens the adverse effect of fairness on efficiency when own payoff depends on the approval by group members.

Method

Participants. Forty two undergraduate students (24 woman and 18 men) at Göteborg University volunteered to participate in return for the equivalent of approximately US$5. The mean age of the participants were 26.4 years (ranging from 19 to 62 years). Equal numbers of participants were randomly assigned to two groups.

Design. The design was a 2 (bonus: low vs. high) by 3 (fairness: high vs. medium vs. low) by 10 (trials) factorial with repeated measures on the two last factors.

Procedure. Participants served individually in groups of maximally six. After arriving to the laboratory, they were seated in separate booths. Each booth was equipped with a computer that controlled the presentation of the instructions and materials using the Question Asker 2000 software (DirSoft®). The task was to make series of decisions to allocate a resource to two groups with five members each who were fellow students whom participants had never met or expected to meet in the future. The instructions led the participants to believe that the groups and the payoffs to the groups were real. When asked no participants expressed any doubt about the groups being real. Three blocks corresponded to low, medium, and high fairness. The order between the blocks was counterbalanced across participants.
Without participants being informed, each block was restricted to 10 trials. In each block the resource started at a level of 1500 points. It could increase to 1800 points. A block was ended when the resource fell behind 150 points. A table displayed on the computer screen informed the participants of how many points they had accumulated to the privileged group who received most points and to the unprivileged group who received least points. The number of points that were left of the resource was also shown. Participants could inform themselves in advance about the outcomes by clicking with the mouse on the different response alternatives. When satisfied, they clicked a continue button on the screen to make the choice and move on to the next trial.

Participants were told that they would receive a bonus if a majority of group members (privileged and unprivileged) voted in favor of it. One of the groups of participants was assigned to a low payoff condition (a bonus of SEK 20), the other group to a high payoff condition (a bonus of SEK 100). Participants were later mailed the bonus that they earned.

Each decision consisted of a choice between 11 different alternatives arbitrarily ordered from 0 (A) to 10 (K). Choosing the lowest response alternative minimizes the difference in payoff to the groups but also the number of points taken from the resource. Constantly choosing this response alternative would therefore deplete the resource in 2 trials. Choosing a higher response alternative, that would preserve the resource longer, also increases the difference in group payoffs, more in the low-fairness than in the high-fairness condition with the medium-fairness condition falling in between.

Table 1 shows the payoffs for low, medium, and high fairness as well as the consequences for the resource of each choice at the start of the block. After each trial the payoff matrix was updated by taking into account the choice the participants made. As may be seen, in the high-fairness condition, the lowest response alternative rendered both groups 400 points. For each higher response alternative, the payoff to the privileged group was reduced by 29 points, the payoff to the unprivileged group by 30 points. In the medium-fairness condition, the privileged group received 400 points and the unprivileged group 350 points for the lowest response alternative. The reduction in the privileged group was 27 points and in the unprivileged group 30 points. Finally, in the low-fairness condition, the privileged group received 400 points and the unprivileged group 300 points for the lowest response alternative. The reduction in the privileged group was 25 points and in the unprivileged group 30 points.

\[1\] A SEK or Swedish Crown is approximately equivalent to US$0.10.
Table 1. The point payoffs for low, medium, and high fairness at the start of the block. (Experiment 1.)

<table>
<thead>
<tr>
<th>Block</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low fairness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Privileged group</td>
<td>400</td>
<td>375</td>
<td>350</td>
<td>325</td>
<td>300</td>
<td>275</td>
<td>250</td>
<td>225</td>
<td>200</td>
<td>175</td>
<td>150</td>
</tr>
<tr>
<td>Unprivileged group</td>
<td>300</td>
<td>270</td>
<td>240</td>
<td>210</td>
<td>180</td>
<td>150</td>
<td>120</td>
<td>90</td>
<td>60</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>Effect on resource</td>
<td>-800</td>
<td>-700</td>
<td>-600</td>
<td>-500</td>
<td>-400</td>
<td>-300</td>
<td>-200</td>
<td>-100</td>
<td>0</td>
<td>+100</td>
<td>+200</td>
</tr>
<tr>
<td>Medium fairness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Privileged group</td>
<td>400</td>
<td>373</td>
<td>346</td>
<td>319</td>
<td>292</td>
<td>265</td>
<td>238</td>
<td>211</td>
<td>184</td>
<td>157</td>
<td>130</td>
</tr>
<tr>
<td>Unprivileged group</td>
<td>350</td>
<td>320</td>
<td>290</td>
<td>260</td>
<td>230</td>
<td>200</td>
<td>170</td>
<td>140</td>
<td>110</td>
<td>80</td>
<td>50</td>
</tr>
<tr>
<td>Effect on resource</td>
<td>-800</td>
<td>-700</td>
<td>-600</td>
<td>-500</td>
<td>-400</td>
<td>-300</td>
<td>-200</td>
<td>-100</td>
<td>0</td>
<td>+100</td>
<td>+200</td>
</tr>
<tr>
<td>High fairness</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Privileged group</td>
<td>400</td>
<td>371</td>
<td>342</td>
<td>313</td>
<td>284</td>
<td>255</td>
<td>226</td>
<td>197</td>
<td>168</td>
<td>139</td>
<td>110</td>
</tr>
<tr>
<td>Unprivileged group</td>
<td>400</td>
<td>370</td>
<td>340</td>
<td>310</td>
<td>280</td>
<td>250</td>
<td>220</td>
<td>190</td>
<td>160</td>
<td>130</td>
<td>100</td>
</tr>
<tr>
<td>Effect on resource</td>
<td>-800</td>
<td>-700</td>
<td>-600</td>
<td>-500</td>
<td>-400</td>
<td>-300</td>
<td>-200</td>
<td>-100</td>
<td>0</td>
<td>+100</td>
<td>+200</td>
</tr>
</tbody>
</table>

Following the blocks of allocation decisions, participants indicated how many members in the privileged group (0-5) and in the unprivileged group (0-5), respectively, they believed would vote for their bonus. Participants also rated the importance of attaining the bonus, maximizing fairness between the groups, and maximizing payoffs to the groups. The ratings were made on scales ranging from 1 (not important at all) to 9 (very important).

A session lasted for about 30 minutes after which participants were debriefed and paid their financial compensation.

Results

Manipulation Checks. The mean number of group members that participants expected to vote for the bonus is shown in Table 2. Since there was no effect involving bonus, the means are collapsed across bonus. As can be seen, this number was larger in the privileged than in the unprivileged group for all levels of fairness. The number was furthermore larger in the high-fairness condition than in both the medium-fairness and low-fairness conditions and somewhat larger in the medium-fairness condition than in the low-fairness condition. A 2 (bonus: high vs. low) by 2 (group: privileged vs. unprivileged) by 3 (fairness: high vs. medium vs. low) analysis of variance (ANOVA) with repeated measurements on the two last factors yielded a main effect of group ($M_{privileged}=3.6$ and $M_{unprivileged}=2.1$ for the privileged and unprivileged group, respectively), $F(1,40) = 38.2$, $p < .001$, $MSe=3.5$, a significant main effect of fairness ($M_{low}=2.68$, $M_{medium}=2.78$, and $M_{high}=3.18$, for low, medium, and high fairness respectively), $F(1.78,71.09) = 8.0$ (Greenhouse-Geisser corrected dfs), $p < .002$, $MSe=0.86$, and a significant interaction effect between group and fairness, $F(1.97,78.8) = 16.7$ (Greenhouse-Geisser corrected dfs), $p < .001$, $MSe=0.88$. Bonferroni-corrected $t$-tests at $p = .05$ showed significant
differences in number of votes between privileged and unprivileged group for low and medium fairness. The mean differences were also significant between medium and high fairness and low and high fairness for the unprivileged group.

Table 2. Mean number of group members (0-5) expected to vote for a bonus related to low vs. high bonus and low vs. medium vs. high fairness.

<table>
<thead>
<tr>
<th></th>
<th>Low fairness</th>
<th>Medium fairness</th>
<th>High fairness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Privileged</td>
<td>3.8</td>
<td>3.55</td>
<td>3.45</td>
</tr>
<tr>
<td>Unprivileged</td>
<td>1.55</td>
<td>2.0</td>
<td>2.9</td>
</tr>
</tbody>
</table>

Table 3 displays the mean ratings of importance of bonus, fairness, and group payoff. As may be seen, fairness is always rated to be more important followed by payoff to the groups and bonus (own payoff). This was substantiated by a 2 (bonus: high vs. low bonus) by 3 (goal: bonus vs. fairness vs. group payoff) ANOVA with repeated measures on the last factor yielding a significant main effect of goal ($M_3=3.45$, $M_1=7.25$, and $M_2=5.35$ for bonus, fairness, and group payoff, respectively), $F(1.96, 78.4) = 38.1$ (Greenhouse-Geisser corrected dfs), $p<.001$, $MSe=3.98$, and a significant interaction effect between goal and bonus, $F(1.96, 78.4) = 3.6$ (Greenhouse-Geisser corrected dfs), $p<.05$, $MSe=3.98$. Bonferroni-corrected separate $t$-tests at $p=.05$ revealed significant mean differences between bonus and fairness and between bonus and group payoff for low bonus, and significant mean differences between bonus and fairness and between fairness and group payoff for high bonus.

Table 3. Mean importance ratings\(^a\) of bonus, fairness, and group payoff related to low vs. high payoff.

<table>
<thead>
<tr>
<th></th>
<th>Bonus</th>
<th>Fairness</th>
<th>Group payoff</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low bonus</td>
<td>2.6</td>
<td>7.2</td>
<td>5.6</td>
</tr>
<tr>
<td>High bonus</td>
<td>4.3</td>
<td>7.3</td>
<td>5.1</td>
</tr>
</tbody>
</table>

\(^a\)Ratings of importance were made on a scale between 1 – 9.

Resource Allocation Decisions. Figure 1 plots mean remaining resource size across trials in each fairness condition collapsed across bonus. As may be seen, the remaining resource decreases across trials. Less of the resource was as expected depleted in the medium-fairness and high-fairness conditions than in the low-fairness condition. No effect of bonus or interaction between bonus and fairness was evident. A 2 (bonus: low vs. high) by 3 (fairness: low vs. medium vs. high) by 10 (trials) ANOVA with repeated measures on the last two factors did not yield any main effects except of trials. Significant linear, $F(1, 41) = 150.20$, $p<.001$, $MSe=336468.38$, quadratic, $F(1, 41) = 63.26$, $p<.001$, $MSe=133361.96$, and cubic trends, $F(1, 41) = 17.11$, $p<.001$, $MSe=65870.55$, were associated with trials. A significant interaction with fairness was found on the linear trend, $F(2, 82) = 3.13$, $p<.05$, $MSe=47349.60$, when computed for the last four trials. In post hoc tests at $p=.05$, low and medium fairness differed in the linear trend whereas medium and high fairness did not.
Figure 1. Mean remaining resource size (points) as related to fairness plotted against trials.

Discussion

As expected, the results showed that fairness had an adverse impact on efficiency. Yet, only a significant difference between low and medium or high fairness, not between the latter, was observed. This suggests that a certain degree of unfairness is accepted. Additional support for the strength of the fairness motive was that participants rated fairness to be more important than group payoff and own payoff.

Also, as expected, participants anticipated that the privileged group would be more likely to vote for the bonus than would the unprivileged group. The mean difference in expected number of votes between privileged and unprivileged group increased when the fairness motive was made salient. This suggests that linking self-interest closer to fairness by raising the bonus should result in an increased effect of fairness on resource allocation decisions. However, bonus failed to yield significant effects. Still, a nearly significant difference was found on the ratings of the importance of the bonus. The participants with the high payoff rated the bonus as more important than the participants with the low payoff. Since previous studies have shown that participants’ greed increases with the size of a bonus (Bethwaite & Tompkinson, 1993; Boyes, 1996), perhaps the size was not large enough to influence the allocation decisions.
Experiment 2

In Experiment 1 participants preferred small differences to large differences between groups despite that this led to higher use of the resource. As a consequence, each group received a worse outcome than they would have received otherwise. Since these consequences might have been somewhat difficult to anticipate in the multistage allocation decision task, it may be asked whether the participants failed to do this? A task was therefore devised in Experiment 2 where payoffs to a privileged and an unprivileged group were directly rated with respect to goodness and fairness. The difference in group payoffs and the sum of the payoff to the groups were crossed in an orthogonal experimental design. A main effect of the difference in group payoff was expected. The goodness ratings were furthermore assumed to be accounted for by the fairness ratings.

Method

Participants. Another 24 undergraduate students at Göteborg University participated in return for the equivalent of US$5.0. Twelve were men and 12 women. Their mean age was 25.0 years (ranging from 20 to 39 years old).

Design. The design was a 4 (difference in group payoff) by 4 (sum of group payoff) repeated-measures factorial.

Procedure. A booklet was administered to the participants during a break in another unrelated experiment. The participants who served individually or in groups of maximally 6 were seated in private booths in the laboratory.

On each page of the booklet, two point payoffs to a privileged and to an unprivileged group were presented. The participants were told that each group had five members who were fellow students whom they had never met or expected to meet in the future. The payoffs were presented twice according to individually randomized orders. In one block participants were asked to rate the goodness of the allocation decision for all 16 combinations of the differences in group payoffs (20, 60, 100, or 140 points) and the sum of group payoffs (160, 320, 480, and 640 points) (see Table 4). In a second block they rated fairness of the same combinations. The ratings were made on seven-point scales ranging from very bad or unfair to very good or fair.

The order of the ratings of goodness and fairness was counterbalanced across participants. Other sets of ratings were interpolated between the ratings of goodness and fairness. The booklet was answered in about 15 minutes.
Table 4. Payoffs to privileged group and unprivileged group as a function of difference between and sum of group payoff.

<table>
<thead>
<tr>
<th>Sum (priv.+ unpriv.)</th>
<th>Difference (privileged - unprivileged, group)</th>
<th>20</th>
<th>60</th>
<th>100</th>
<th>140</th>
</tr>
</thead>
<tbody>
<tr>
<td>640</td>
<td>330/310a</td>
<td>350/290</td>
<td>370/270</td>
<td>390/250</td>
<td></td>
</tr>
<tr>
<td>480</td>
<td>250/230</td>
<td>270/210</td>
<td>290/190</td>
<td>310/170</td>
<td></td>
</tr>
<tr>
<td>320</td>
<td>170/150</td>
<td>190/130</td>
<td>210/110</td>
<td>230/90</td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>90/70</td>
<td>110/50</td>
<td>130/30</td>
<td>150/10</td>
<td></td>
</tr>
</tbody>
</table>

*a privileged group / unprivileged group

Results and Discussion

Figure 2 displays the mean goodness and fairness ratings as functions of the difference and sum of group payoffs. As expected, both ratings decreased with increasing differences. Parallel 4 (difference in group payoffs) by 4 (sum of group payoffs) ANOVAs confirmed these observations by yielding significant main effects of the difference for goodness, $F(1.36,31.2)=52.7$, $p<.001$, $MSe=3.44$, and for fairness, $F(1.32,30.4)=60.8$, $p<.001$, $MSe=3.38$ (Greenhouse-Geisser corrected dfs). However, the decrease as a function of the difference was somewhat reduced when the sum of the group payoffs increased. This was substantiated by significant main effects of the sum, $F(1.39,32.06)=23.8$, $p<.001$, $MSe=2.10$ for goodness, and $F(1.56,35.86)=19.7$, $p<.001$, $MSe=1.68$ (Greenhouse-Geisser corrected dfs) for fairness, as well as a significant interaction between the difference and sum, $F(5.64,129.75)=3.06$, $p<.01$, $MSe=0.48$, for goodness, and a nearly significant interaction between the difference and sum, $F(4.52,103.90)=1.93$, $p=.102$, $MSe=0.47$, for fairness. Bonferroni-corrected $t$-tests at $p<.05$ showed that all differences between the levels of sum and levels of difference were significant except the difference between the two largest sums (640 vs. 480). As suggested by an analysis of covariance (ANCOVA) with the ratings of fairness as covariate, the ratings of goodness were partially mediated by fairness, $F(3, 68) = 3.23$, $p=0.028$ (sum), $F(3, 68) = 2.91$ (difference), $p=0.041$, and $F(9, 206) = 2.35$, $p=0.015$ (interaction between sum and difference). An ANOVA on the difference between the ratings yielded no significant effects at $p=.05$. Inspection of the differences suggested however that the sum influences the goodness ratings more than it influences the fairness ratings.
Figure 2. Mean ratings of goodness and fairness of allocation decisions as a function of the difference in group payoffs and sum of payoffs to privileged and unprivileged group
General Discussion

The primary aim of Experiment 1 was to investigate the hypothesis that fairness impacts negatively on the efficient outcomes of resource allocation decisions, thus counteracting preservation of the resource. As expected, in Experiment 1 a higher use of the resource was found when fairness was low than when it was high. The hypothesis that greed (i.e., increases in own payoff or bonus) strengthens the adverse effect of fairness on efficiency was however not confirmed.

In Experiment 1 differences were found in the low vs. medium fairness and the low vs. high fairness, but not in the medium vs. high fairness condition. Participants appeared to accept unfairness between the groups up to a certain level, but when the difference became large, the need to allocate fairly became salient. Also, in Experiment 1, that participants rated fairness higher than maximizing final outcomes provided additional support for the importance of fairness. Furthermore, the anticipated number of group members voting for a bonus differed between the privileged and unprivileged groups. Participants anticipated votes by group members, particularly those in the unprivileged group, against the bonus to a higher degree when fairness decreased.

Contrary to prediction, the manipulation of a bonus did not show any effects on the allocation decisions. However, the ratings of the importance of the bonus differed in the expected direction between the two bonus groups. A possible explanation for these results is that the participants’ self-interest increases as a function of the increased bonus. Yet, the size of the bonus was perhaps not high enough to influence the allocation decisions. The large variance within the high-bonus group provides some support for this explanation. Previous research has found that if stakes are raised, self-interest becomes more important (Bethwaite & Tompkinson, 1993; Boyes, 1996).

The question was raised whether participants in Experiment 1 understood that payoffs accumulated over trials so that, in effect, larger payoffs to the groups were achieved by allowing unfairness in order to preserve the resource. Although careful pre-testing as well as pre-experimental questions indicated that participants clearly understood the instructions, it was considered essential to be able to find out if minimizing differences between groups is preferred to maximizing the sum. Therefore, in Experiment 2 ratings were obtained of allocations to the groups in the same range as in Experiment 1. The results showed, for both the ratings of goodness and fairness, that participants primarily take into account differences in allocations. However, the sum had some effect when it grew larger. Still, the results support the conclusion that participants reacted to increasing differences in group payoffs by minimizing them. Thus, the effects of fairness in Experiment 1 were most likely due to participants’ desire to minimize the differences in allocations between the privileged and the unprivileged group.

An attempt to link self-interest to fairness was made without producing the hypothesized effect. Similarly, it is possible to link self-interest to efficiency by rewarding preservation or punishing depletion of the resource. If such measures are effective in counteracting fairness needs to be empirically addressed. Furthermore, research shows that people react differently to negative than to positive outcomes. Whether fairness would influence allocation of costs differently than allocation of rewards is a related question that needs to be investigated. It is also of importance to determine whether and how the fairness effect can be generalized to allocations between more than two groups.
References


