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Waste Management: How Reducing Partiality Can Promote Efficient Resource Allocation

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Two central principles that guide resource-allocation decisions are equity (providing equal pay for equal work) and efficiency (not wasting resources). When these two principles conflict with one another, people will often waste resources to avoid inequity. We suggest that people wish to avoid inequity not because they find it inherently unfair, but because they want to avoid the appearance of partiality associated with it. We explore one way to reduce waste by reducing the perceived partiality of inequitable allocations. Specifically, we hypothesize that people will be more likely to favor an efficient (albeit inequitable) allocation if it puts them in a disadvantaged position than if it puts others in a disadvantaged position. To test this hypothesis, we asked participants to choose between giving some extra resource to one person (thereby creating inequity between this person and equally deserving others) and not giving the resource to anyone (thereby wasting the resource). Six studies, using realistic scenarios and behavioral paradigms, provide robust evidence for a *self-disadvantaging effect*: Allocators were consistently more likely to create inequity to avoid wasting resources when the resulting inequity would put *them* at a relative disadvantage than when it would put others at a relative disadvantage. We further find that this self-disadvantaging effect is a direct result of people's concern about appearing partial. Our findings suggest the importance of impartiality even in distributive justice, thereby bridging a gap between the distributive and procedural justice literatures.

Keywords: fairness, decision making, efficiency, equity, public policy

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Resource allocation is guided by several central principles that at times clash with one another (Messick, 1995). One cardinal principle is equity, or "equal pay for equal work." This pervasive belief that rewarding one person more than another for identical output is unacceptable is reflected from decision makers' allocations in laboratory experiments, to the commonplace agreements between parents and children (for a review, see Hook & Cook, 1979) and international human rights law[1] (for reviews, see Cook & Hegtvedt, 1983; Damon, 1977; Lerner, 1974; Leventhal, Popp, & Sawyer, 1973; Walster, Walster, & Berscheid, 1978). A second guiding principle of resource allocation is "waste not." People's belief that wasting valuable resources is unacceptable is so strong that they may even act against their own self-interest to avoid the appearance or feeling of being wasteful (Arkes, 1996; Arkes & Hutzel, 1997; Zultan, Bar-Hillel, & Guy, 2010). To avoid waste, decision makers try to allocate resources efficiently, that is, to maximize the overall outcomes and to ensure that no money is left "on the table" (Bar-Hillel & Yaari, 1993; Charness & Rabin, 2002; Van Lange, Otten, De Bruin, & Joireman, 1997). Critically, efficient allocations are not necessarily equal. For example, if two people are dividing three tickets for a show between themselves, an allocation that gives each person one ticket (and throws one ticket away) is equal, but it is inefficient because the third ticket is wasted. An allocation that gives one person one ticket and the other person two tickets is efficient but unequal.

Abundant evidence (that we review below) suggests that when efficiency and equity are in conflict, people often preserve equity rather than ensure efficiency (Camerer, 2003; Dawes, Fowler, Johnson, McElreath, & Smirnov, 2007; Güth, Schmittberger, & Schwarze, 1982; Kahneman, Knetsch & Thaler, 1986; Loewenstein, Thompson, & Bazerman, 1989; Mitchell, Tetlock, Mellers, & Ordonez, 1993; for a review, see Shaw, 2013). Consider, for

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[1] See, for example, http://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0::NO::P12100_ILO_CODE:C100, retrieved April 4, 2015.

example, one psychology lab that we know that had several old computers and one new state-of-the-art iMac. Rather than lending the new iMac to one of the graduate students, the lab manager (who was in charge of distributing resources to the students) decided that no one could use it. The lab manager had the intuition that because not everyone could have the benefit of using this new computer, it would be more fair for no one to use it.

In this article, we explore whether the tendency to favor equitable but inefficient allocations can be reduced. If people are driven by aversion to inequity per se (as some have suggested; see Adams, 1965; Fehr & Schmidt, 1999), they should be generally reluctant to create inequity, which should make convincing them to reduce this waste quite difficult. However, we develop the theoretical idea that a desire to avoid showing partiality to others drives people's apparent aversion to inequity (Shaw, 2013). On this account, unequal pay for equal work is often bad not because it creates inequity, but because it evidences partiality. Partiality here refers to preferential treatment toward an agent that is dependent on the agent's identity (DeScioli & Kurzban, 2013).[2] If the partiality account is correct, people should be more willing to pay others unequally for equal work (i.e., create inequity) in settings where doing so does not reflect partiality. We explore whether changing which allocator is responsible for making the allocation decision can reduce the perceived partiality of inequitable allocations. We predict that people in third-party allocation settings (e.g., the aforementioned lab manager, who can only allocate computers to graduate students, not to herself) will generally prefer inefficient yet equitable allocations because allocating unequally in this setting would appear partial toward the person who received more. By contrast, allocators in potentially disadvantaged settings (who would create an unfavorable social comparison for themselves by giving more to others) will generally prefer efficient yet inequitable allocations. For example, suppose the aforementioned lab manager had asked one of the students in the lab named Heather, who was working with an old computer, to decide whether one of her fellow students, Jane, should get to use the new computer, or whether the new computer should sit idle. According to our prediction, Heather (who would be putting herself at a relative disadvantage by allowing Jane to use the better computer) would be more likely than the lab manager to say Jane should use the computer, because even though her decision will create inequity, it will appear less partial than the lab manager's decision.

Our current studies examine whether those who are relatively disadvantaged by an allocation will indeed be more likely to favor efficient yet inequitable allocations, and if their decision to do so is mediated by the belief that they will be viewed as less partial relative to third-party allocators. Such findings would support the impartiality account of fairness, whereby people waste resources to avoid partiality and not necessarily inequity per se, providing a more parsimonious account of fairness concerns. More generally, we argue that this account can help bridge an existing gap between the distributive and procedural justice literatures, enabling both areas to be united under the notion of impartiality.

Inefficient Equity or Efficient Inequity?

Field observations and laboratory experiments in social psychology and economics have long indicated that people pursue equity—equal pay for equal work (for a review, see Adams, 1965; Fehr & Schmidt, 1999). People state that they wish they lived in a more egalitarian society (Norton & Ariely, 2011), and show an aversion to being paid less than others in the workplace (Goodman & Friedman, 1971; Hook & Cook, 1979; Lawler, 1968; Sweeney & McFarlin, 2004; Sweeney, McFarlin, & Inderrieden, 1990). Concerns with equity are so basic they appear in childhood (Fehr, Bernhard, & Rockenbach, 2008; Hook & Cook, 1979) and have even been found in the reactions of infants, who look longer when they see someone share unequally than when they see someone share equally (Geraci & Surian, 2011; Schmidt & Sommerville, 2011; Sloane, Baillargeon, & Premack, 2012). Indeed, from childhood to adulthood, people strive to distribute rewards to others in line with equity—giving resources equally to those who do equal work, and giving more resources to those who do more work (for reviews, see Adams, 1965; Baumard, Mascaro, & Chevallier, 2012; Cook & Hegtvedt, 1983; Damon, 1977; Lerner, 1974; Leventhal et al., 1973; Walster et al., 1978).

Why do people endorse equity? Several motivations could explain observed preferences for equitable resource allocations (for review, see Shaw & Olson, 2012). One such motivation is concern with efficient social welfare, whereby people want to maximize the distributed resources and in particular to improve the outcomes of those who have the least (Charness & Rabin, 2002; Engelmann & Strobel, 2004; Mitchell et al., 1993). For example, people report that they generally prefer income distributions in which the average income is lower overall to income distributions with a larger average income but also a larger variance (i.e., more inequity; Lam, Schaubroeck, & Aryee, 2002; Mitchell et al., 1993; Scott, Matland, Michelbach, & Bornstein, 2001). Because of principles such as diminishing marginal utility, allocating more resources to those who have the least will provide the most efficient distribution of resources and will coincidentally lead people to pursue more equitable resource distributions. People will sometimes support allocations that give more resources to others who have less, even at their own personal expense, in which case their behavior is considered generous (Camerer, 2003).

Although equity and efficiency can often be aligned, they are not always. Various lines of research demonstrate how the tendency to pursue equity can actually lead to less efficient resource allocations. In economic games, players routinely forgo money to avoid inequitable allocations. In the ultimatum game, for example, players reject unfavorable offers such that both sides receive nothing (Camerer, 2003; Güth et al., 1982; Kahneman et al., 1986). In other allocation settings, players are willing to incur some cost to reduce the incomes of above-average earners (Dawes et al., 2007). Such equitable allocations clearly do not reflect a concern with efficiency (as they involve waste) and may instead demonstrate a concern with social comparison or envy: Allocators may oppose inequity simply because they do not want to get less than others (Bazerman, White, & Loewenstein, 1995; Dawes et al., 2007; Fehr & Schmidt, 1999; Festinger, 1954; Kirchsteiger, 1994; Loewenstein et al., 1989; Messick & Sentis, 1985; Nichols, 2010; Tricomi, Rangel, Camerer, & O'Doherty, 2010).

[2] Of course, unequal allocation need not be perceived as partial as long as it can be excused by a commonly agreed-upon social justification (Shaw, 2013). For example, giving more to someone who worked harder is generally not seen as a form of partiality.

Whereas concern with efficiency and envy may explain some of people's preference for equitable outcomes, some recent evidence suggests people may pursue equity even when doing so is inefficient (or wasteful) and envy concerns are irrelevant, for example, when third-party allocators who are not personally affected by the allocation engage in wasteful behavior to avoid inequity (for a review, see Shaw, 2013). For example, 6- to 8-year-old children will throw a candy bar in the trash rather than give it to only one of two equally deserving children (Shaw & Olson, 2012; for endorsements of waste to avoid inequity, see also Blake & McAuliffe, 2011; Kenward & Dahl, 2011; Shaw, DeScioli, & Olson, 2012). Adults too prefer such equitable allocations to efficient ones even in cases in which inequity does not make anyone worse off, and thus, social welfare does not justify such waste (Shaw & Knobe, 2013).

On the Role of Appearing Impartial

Why are people willing to waste resources to avoid inequity in contexts that cannot be explained by concern with efficiency or envy? Several authors have suggested people simply have a preference for fairness (Camerer, 2003; Fehr & Schmidt, 1999; Mitchell et al., 1993; Rabin, 1993; Shaw, 2013); however, these authors disagree about what composes this preference for fairness. The equity account suggests people are motivated to avoid inequity (even at the expense of inefficiency) because they find inequity to be intrinsically unfair (Adams, 1965; Bolton & Ockenfels, 2000; Fehr & Schmidt, 1999; Hook & Cook, 1979; Walster et al., 1978). The impartiality account suggests people's preference for avoiding partiality actually drives this apparent preference for equitable outcomes (Shaw, 2013). This impartiality account of fairness argues that the reason people object to unequal pay for equal work (inequity) is that such divisions of resources often mean showing partiality to one of the recipients, where partiality is defined as giving someone more than others based on that person's unique identity (e.g., their individual allegiances; DeScioli & Kurzban, 2013). An unequal allocation of resources will be viewed as partial unless a culturally agreed-upon justification (e.g., merit, need, and talent) exists for giving more to one party rather than the other. For example, at least in western cultures, people do not think giving more to someone who worked harder than someone else is partial. Thus, according to both the equity and impartiality accounts of fairness, people should favor unequal allocation to someone who has done more work than another, because such an allocation is equitable and also does not evidence partiality. Both accounts, of course, also predict that people should favor equal allocations when both parties have done equal work (i.e., equitable allocations), regardless of efficiency. More important, though, the impartiality account (but not the equity account) predicts that in some cases, inequitable distributions of resources should be seen as fair.

If the equity account is correct, and allocators avoid inequity because they find it inherently unfair, people should be inclined to waste resources whenever the allocation will result in inequitable outcomes. However, if the impartiality account is correct, and allocators avoid inequity because they want to avoid being perceived as partial, then reducing the perceived partiality of inequitable outcomes should reduce waste that occurs in the name of equity. In other words, if the impartiality account is correct, then reducing concerns about appearing partial should make inequity seem less unfair and should, therefore, promote more efficient allocations. Evidence from the literature on procedural justice is consistent with this impartiality account of fairness, where studies demonstrate people will favor inequitable yet efficient allocations if these are achieved in a manner that is clearly impartial, such as a coin flip, because people perceive such procedures as fair (Tyler, 2000; for review, see Shaw & Olson, 2014). However, clearly the equity account can also explain preferences for using such procedures. For example, flipping a coin to assign an additional bonus maintains equity, because each recipient receives an equal payment in the form of a "chance" to win the resource in question, equivalent to receiving a lottery ticket ex ante. Even if each employee ends up with a different amount of resources based on the procedure, they received equal pay for equal work when the decision maker chose to flip the coin; that is, they were paid the same expected value.

Thus, to differentiate the impartiality account from the equity account, devising a way to reduce partiality that does not involve giving each recipient a payment in the form of a chance to win is necessary. In this article, we test a novel way to reduce people's concern with partiality and thereby shift their equity-efficiency tradeoffs in favor of efficiency. Here, instead of changing the procedure, we propose changing which allocator is responsible for making the allocation decision. If allocators waste resources in the name of equity to avoid the appearance of partiality, they should be less likely to waste resources if their inequitable resource distributions are unlikely to appear partial to others. One such group of allocators includes those who would put *themselves* at a relative disadvantage by giving additional benefits to another person (i.e., giving more to others and thereby creating an unfavorable social comparison for herself). By giving more to another person than to themselves, such potentially disadvantaged allocators, if anything, would be partial against themselves. Their decision to create inequity should, therefore, be perceived as fair and acceptable (if not laudable). We compare these *self-disadvantaged* allocators to *third-party* allocators whose allocation affects the resources others receive, but does not affect the resources they personally receive. Here, allocating resources to one party but not to the other suggests favoritism and might appear partial to outside observers.

Therefore, we predict that inequitable allocations made by allocators who might put *themselves* at a relative disadvantage would appear as less partial and thus as more fair than the same inequitable allocations made by third-party allocators. Relatively disadvantaged parties will, therefore, be more likely than "unbiased" third-party allocators to create efficient inequity. The self-disadvantaging effect implies that in some circumstances, creating inequity that places oneself in a disadvantaged position might eliminate the negative social inferences associated with inequity, and make one more likely to create inequitable allocations to avoid waste.

On the Role of Envy

On the surface, this self-disadvantaging effect might seem counterintuitive. After all, why would disadvantaged parties opt for others to get more resources, in a way that would make their own resources seem inferior by comparison? Indeed, as mentioned above, people routinely engage in social comparison and are particularly averse to settings that place them in a disadvantaged

position or that create envy over others' better outcomes (Adams, 1965; Brickman & Bulman, 1977; Fehr & Schmidt, 1999; Festinger, 1954; Loewenstein et al., 1989; Messick & Sentis, 1985). Such inferiority hurts people's satisfaction, motivation, and productivity (Boyce, Brown, & Moore, 2010; Dunn, Ruedy, & Schweitzer, 2012; Luttmer, 2005; Moran & Schweitzer, 2008; Sweeney et al., 1990). In some circumstances, it even leads them to waste their own resources as well as others' (Dawes et al., 2007; Frank, 2005; Loewenstein et al., 1989). This research seems to indicate that disadvantaged parties would be *more* likely to waste resources than third parties, whom the social comparison does not personally affect.

Critically, however, recent research has found that giving people a sense of agency in creating allocation outcomes can reduce their negative response to receiving less than others (Choshen-Hillel & Yaniv, 2011, 2012). This work suggests envy should be weaker for those who are actively involved in creating the allocation (i.e., agentic parties) than for those who are not involved in creating the allocation (i.e., nonagentic parties). Because people who have agency over the allocations view the differences in outcomes between the self and others as a consequence of their own deliberate actions (rather than a social signal of lower status), agentic individuals should be more likely than nonagentic individuals to promote social welfare, even if doing so places them in a disadvantaged position. In one study testing this prediction, participants received payment for completing a task. They were then told about another person who could receive either the same or a higher payment for completing the same task. In support of the agency prediction, participants who had no control over the payment to the other party indicated a preference for the equal payment. However, participants who were given a choice tended more toward the higher payment for the other, even though this decision resulted in a negative comparison for them (Choshen-Hillel & Yaniv, 2011). This finding implies that people who are given control over the allocation of resources between themselves and others might be less worried about putting themselves at a relative disadvantage than are those who do not have control.

In summary, we propose that in some circumstances, when people are given a choice between allocating resources equally or giving more to others, they will be more likely to favor an efficient (albeit inequitable) outcome if doing so puts them in a relatively disadvantaged position than if it puts others in a disadvantaged position (i.e., if they are a neutral third party). The relatively disadvantaged allocators will favor efficient inequality because they will be less concerned about appearing partial than third parties will, and they will not be concerned about negative social comparison, because they will create the disadvantageous inequity themselves.

Overview of Studies

To test our self-disadvantaging hypothesis, we designed a series of studies that asked people to decide how resources should be distributed. In most cases, participants were given two options. They could either give an extra resource to one of two equally deserving parties or they could give it to neither of them, thereby wasting the resource. Thus, if participants chose to give the extra resource to one party, they would create an efficient (no money was left on the table) yet unequal (one person would get more than the other) allocation. However, if they chose to give the resource to neither of them, they would create an inefficient (resource is wasted) yet equal (both parties would get the same amount) allocation. In all cases, we held merit, need, and effort constant to align equality with equity.

More important, in all studies, we manipulated whether or not the self would be relatively disadvantaged (i.e., by negative social comparison) by the efficient unequal allocation. In our basic paradigm, participants were assigning resources between two equally deserving employees and could choose between efficient inequality and inefficient equality. In the *self-disadvantaged condition*, the participants were one of these employees and, therefore, choosing the more efficient option of giving the resource to someone else would put the *self* at a relative disadvantage. In the *third-party condition*, we similarly asked participants to distribute resources between equally deserving employees. However, here the participants did not receive any resources themselves and so acted as third parties whom the distribution did not affect. We predicted a *self-disadvantaging effect* whereby participants would be more likely to pick efficient (albeit unequal) outcomes when the resulting inequality would leave them relatively disadvantaged.

We predicted the self-disadvantaging effect would occur because participants who disadvantaged themselves by opting for inequality would not be as concerned about appearing partial, because their decision to create inequality would (if anything) be partial against them rather than against someone else. We tested our basic hypothesis in Study 1. In Studies 2, 3, and 4a, we tested whether a concern with appearing fair and impartial mediated—and moderated—the self-disadvantaging effect. In Study 5, we tested an alternative account based on in-group favoritism, and in Study 6, we investigated the limitations of the effect.

Study 1

Study 1 investigated the effect of being a potentially disadvantaged party on people's resource allocations. Participants were randomly assigned to either a third-party or a self-disadvantaged condition. In the third-party condition, participants were asked to imagine they were in charge of assigning a new computer to two equally deserving employees, Bill and James. They were told that the employees could not share the new computer, and were asked to decide whether they wanted to let Bill use it or let neither use it, in which case the computer would sit idle. In the self-disadvantaged condition, participants were also asked to imagine they were in charge of assigning a new computer to two equally deserving employees, but in this condition, the two employees were Bill and the participant; thus, choosing the efficient yet unequal option would put the self at a relative disadvantage compared with Bill. We predicted that participants in the self-disadvantaged condition would be *more* likely to allocate unequally to avoid wasting resources (i.e., they would be more likely to let Bill use the new computer than to let it sit idle) than would participants in the third-party condition.

Method

Participants. Participants were recruited online using the Amazon Mechanical Turk website; participation was restricted to participants from the United States. Sixty-nine adults (50% fe-

males, ages ranged from 19 to 73, $M = 33.65$, $SD = 12.96$) participated in this 5-min study for 25 cents. We specified ahead of time that we would exclude any participants who failed to answer correctly the comprehension question. In this study, no participants were excluded from any analyses based on this decision rule.

Procedure. Participants were randomly assigned to either a third-party or a self-disadvantaged condition. Participants read the following scenario [within each set of brackets, the wording for the third-party condition appears first and the wording for the self-disadvantaged condition appears second]:

> Imagine that you are [a manager/an employee] at a big company. [Bill and James/Bill and you] work in the sales department. [They/You] do the same job, use similar standard computers, and are equally productive. One day the company gets a new state-of-the-art iMac. You are asked to decide who should get to use the iMac. Employees cannot share the computer, so if [one of them uses/one of you use] it, the other cannot use it. If no one uses the computer, it will sit idle until next quarter.
>
> What would you do with the computer?

Participants were given two options. They could either let Bill use the new computer or they could let neither employee use it. After making a choice, participants were asked to imagine the computer sits idle and to indicate how wasteful this scenario would be on a scale ranging from 1 (*not wasteful at all*) to 7 (*very wasteful*). Participants were then asked one comprehension question about the text: What was the type of the new computer? (They had to choose one of four options.) Finally, the participants answered some demographic questions.

Results and Discussion

Participants were more likely to let Bill use the new computer when this choice disadvantaged the self (94%) than when it disadvantaged James (55%), $\chi^2(1, N = 69) = 12.54$, $p < .001$; $\varphi = 0.43$. Thus, in line with our hypothesis, people said they were more willing to create inequality in favor of efficiency when they would be disadvantaged by the resulting inequality than when they would not be. Furthermore, responses to the waste question confirmed that participants found the option whereby the computer sits idle to be wasteful ($M = 6.00$, $SD = 1.41$), as compared with the midpoint of the scale (4), $t(68) = 11.75$, $p < .001$.

Study 2

In Study 1, we found that participants were more likely to make efficient yet unequal allocations when the resulting inequality would put them, rather than someone else, at a disadvantage. According to the impartiality account, the reason third-party allocators are less likely to make efficient yet unequal allocations is that they think others will perceive such allocations as partial. People who disadvantage themselves in such allocations, on the other hand, should be less worried about appearing partial when they opt for inequality, because the inequality disadvantages them and does not appear partial. This reduced concern over appearing partial should, therefore, make them more likely to choose unequal but efficient allocations. As noted before, the literature has suggested two other motivations for allocating equally: social comparison (or envy) and preference for social welfare (or generosity). Specifically, disadvantaging the self could make participants more likely to allocate efficiently but unequally because (a) they are more worried about appearing envious when allocating equally and (b) they are more worried about appearing ungenerous when allocating equally.

In Study 2, we take a first step to test the impartiality account, as well as the two other motivations to allocate equally. We used a variation of the Study 1 scenario in which participants allocated monetary bonuses rather than a computer. Participants were asked to make their decision, and then asked to rate how partial, envious, and generous their decision would appear to others if they (a) chose to give the extra resource to one of the employees and (b) chose to give the extra resource to neither.

Method

Participants. Ninety-seven participants from the United States (23% females, age ranged from 18 to 52, $M = 27.24$, $SD = 6.69$) who completed a questionnaire on Mechanical Turk for 25 cents. Four additional participants were excluded, because they failed to answer correctly at least one of the two comprehension questions. All the effects reported below hold if these participants are not excluded (see Supplemental Material for the full analysis of the data, not excluding any participants).

Procedure. Participants were randomly assigned either to a self-disadvantaged condition or to a third-party condition. Participants in the third-party condition were presented with the following scenario [within each set of brackets, the wording for the third-party condition appears first and the wording for the self-disadvantaged condition appears second]:

> Imagine that you are working at a large company. You have been asked to decide how to assign a bonus to two employees, [Allison and Jane/Allison and you]. [They/You] both currently make the same amount each year, do the same job, and have received identical evaluations. The company can give a total of a $500 bonus, but based on institutional rules must assign the bonus in hundred dollar increments. [Allison and Jane/Allison and you] have each been given a $200 bonus. What would you do with the other $100 bonus?

Participants were given two options. They could either give the $100 bonus to Allison or they could give it to neither employee. More important, after making their decision on the allocation of the extra $100 bonus, participants were asked to answer three pairs of additional questions. The first pair of questions concerned impartiality. The first question in this pair was "Imagine you have decided to give the $100 to Allison. Other people would think that you are . . ." They had to rate how impartial other people would think they were on a scale ranging from 1 (*highly partial*) to 7 (*highly impartial*). The second question in this pair had participants imagine they had decided to give the $100 to neither, and participants again rated their perceived impartiality. The second pair of questions was similar, except the questions concerned envy, whereas the third pair of questions concerned generosity. The order of the three pairs was randomized, and the order within each pair was kept constant. After completing the six questions, participants completed two comprehension questions. Specifically, they were asked whether Allison did a better job than Jane, and what the total amount of bonus was that the company could give (they had

to choose one of four options). Finally, they answered some demographic questions.

Results

Allocation decisions. We replicated the effect of the disadvantaged-party condition on allocation decisions from Study 1. Participants were more likely to give the extra $100 bonus to Allison when this choice disadvantaged the self (55%) than when it disadvantaged Jane (25%), $\chi^2(1, N = 97) = 9.14$, $p < .01$; $\varphi = 0.31$.

Process measures. We examined participants' ratings of what others would think of them had they made each type of decision. For each component, we conducted a two-way analysis of variance (ANOVA) with condition (self-disadvantaged or third-party) as a between-participants factor, and with decision (giving the bonus to Allison or to neither) as a within-participants factor.[3] As Table 1 shows, for ratings of perceived impartiality, a significant interaction occurred between condition and decision, $F(1, 95) = 34.33$, $p < .001$, $\eta^2 = .27$. Specifically, when the self was not disadvantaged, the decision to give the bonus to neither was rated as significantly more impartial than the decision to give the bonus to Allison, $F(1, 95) = 57.74$, $p < .001$, $\eta^2 = .38$, but we found no significant gap when the resulting inequality would have disadvantaged the self rather than someone else, $p > .50$. Note that we do not find a crossover interaction. The gap in perceived impartiality in the third-party condition between the decision to give to Allison and the decision to give to neither is eliminated (rather than reversed) in the self-disadvantaged condition. We believe the reason participants rated these two options (the decision to give to Allison or to neither) similarly in the self-disadvantaged condition (and that neither of them is rated as very impartial or very partial, see Table 1) is that both options can be viewed negatively or positively depending on the participants' interpretation of the decision. Some participants may see giving the extra bonus to Allison as partial, whereas others would view this decision as being particularly impartial (because the participant is being partial against herself). Similarly, some participants may view giving the bonus to neither as impartial, whereas others may see doing so as revealing selfishness or envy (and would, therefore, refer to it as partial). The fact that the mean impartiality rating in the self-disadvantaged condition is closer to the center of the scale and the fact that the standard deviation is relatively high both corroborate this interpretation.

For ratings of perceived envy, a significant interaction occurred between condition and decision, $F(1, 95) = 7.88$, $p < .01$, $\eta^2 = .08$. Specifically, when the self was not disadvantaged, the decision to give the bonus to neither was rated similarly to the decision to give the bonus to Allison, $p > .60$, but when the self was disadvantaged, the decision to give the bonus to neither was rated as significantly more envious than the decision to give to Allison, $F(1, 95) = 20.08$, $p < .001$, $\eta^2 = .17$ (see Table 1).

For ratings of perceived generosity, a significant interaction occurred between condition and decision, $F(1, 95) = 16.93$, $p < .001$, $\eta^2 = .15$. Participants in the self-disadvantaged condition thought their decision to give to Allison would seem significantly more generous than their decision to give to neither, $F(1, 95) = 201.87$, $p < .001$, $\eta^2 = .68$, and this gap was relatively smaller for participants in the third-party condition, $F(1, 95) = 68.44$, $p < .001$, $\eta^2 = .42$ (see Table 1).

Finally, to test whether the participants' condition affected their allocation through its influence on their views of impartiality, envy, and generosity, we conducted a mediation analysis (Baron & Kenny, 1986). A bootstrapping technique was used to assess the significance of the mediation, taking into account the dichotomous nature of the dependent variable (Preacher & Hayes, 2008). The three potential mediator variables were computed as the difference between participants' ratings for each pair of decisions on each of the three measures. We tested a mediation model in which all three mediators were entered simultaneously. First, as noted earlier, the experimental, self-disadvantaged condition had a significant effect on allocation ($\beta = -0.65$, $p < .001$). Additionally, all mediators were affected by condition: impartiality ($\beta = -1.96$, $p < .001$), envy ($\beta = 0.76$, $p < .001$), and generosity ($\beta = -0.74$, $p < .001$). However, only impartiality ($\beta = 0.15$, $p < .05$) and generosity ($\beta = 0.29$, $p = .052$) had unique effects on the allocation. The condition was no longer a significant predictor of allocation when mediators were entered into the analysis ($\beta = -0.19$, $p > .40$), suggesting full mediation. The 95% bias-corrected confidence interval for the size of the total indirect effect of condition on allocation through the three components of fairness excluded zero [−1.13, −0.17], suggesting a significant mediation effect.

Table 1
Participants' Average Ratings of What Others Would Think of Them, Depending on Their Decision (Give the Extra Bonus to Allison or to Neither), in Study 2

	Allison	Neither
Impartiality		
Self-disadvantaged	4.55 (2.14)	4.24 (2.39)
Third-party	2.38 (1.54)	5.98 (1.30)
Envy		
Self-disadvantaged	2.37 (1.60)	4.08 (2.41)
Third-party	3.13 (1.53)	3.31 (1.70)
Generosity		
Self-disadvantaged	6.14 (1.02)	2.53 (1.42)
Third-party	4.40 (1.28)	2.27 (1.20)

Note. *SD*s are in parentheses.

Discussion

According to our impartiality account, people whose allocation can disadvantage them believe that others would judge their decision to create efficient (but unequal) allocation as more impartial than those whose allocation can disadvantage others. The findings of Study 2 confirm that people's beliefs about whether they will appear impartial to others drives the allocations they make. Additionally, we find that participants' beliefs about whether their actions will appear generous to others influence these allocations.

To validate our mediation analysis from Study 2, we ran a follow-up study in which we elicited participants' ratings of how their decisions would appear to others, without asking them to make any prior decisions (see Supplemental Material for the full

[3] For brevity of presentation, we report here only the interaction that is the point of interest in the current article, but we present all ratings in Table 1.

method and results). In particular, we asked participants to rate the three attributes (impartiality, envy, and generosity) of a protagonist who has made a decision (a) to give the $100 bonus to Allison and (b) to give the bonus to neither employee (counterbalanced for order). These results support our mediation analysis in Study 2. Namely, they suggest that participants' prior decisions did not drive their different ratings of impartiality, envy, and generosity in the two conditions in Study 2, and support the conclusion that appearance of impartiality and generosity seem to be the main drivers of the self-disadvantaging effect.

Study 3

Studies 1 and 2 show that allocators are more likely to create efficient distributions of resources when these distributions disadvantage the allocator rather than others. According to our theoretical account, the disadvantaged parties' reduced concern with appearing partial when creating unequal allocations drives this effect. To further test this account and delineate its limitations, Study 3 manipulated the overall appearance of partiality associated with third-party or self-disadvantaged allocation settings.

In particular, we examined an allocation setting in which unequal allocation would not seem particularly partial, because allocators had the option of flipping a coin to make their decision, and thus, not show favoritism (Tyler, 2000; for review, see Shaw & Olson, 2014). Here we predicted that people would be more likely to favor efficient inequality in both conditions, because choosing this option appears impartial in both conditions. We also examined an allocation setting in which unequal allocation would seem particularly partial because allocators were forced to choose between two recipients (rather than just having to decide whether to give a resource to a predetermined recipient or group), and thus, have to show favoritism to one over the other. Here we predicted that people would be more likely to favor inefficient equality in both conditions, because choosing the unequal allocation would seem partial in both conditions. In summary, we predicted that when the level of partiality associated with the allocation setting is inherently either high *or* low, the effect of self-disadvantaging should be limited, because disadvantaging the self does not have as much potential to affect the appearance of partiality (as it did in our first two studies). In other words, the partiality associated with the allocation setting should act as a moderator of the self-disadvantaging effect.

Additionally, in all conditions, we tested how fair and impartial participants viewed efficient inequality and inefficient equality. According to our theory, partiality is the essence of fairness. Thus, measures of fairness and impartiality should both similarly mediate our effect in the standard allocation setting, but should not differ much between conditions when partiality is inherently either high or low.

Finally, we used a new scenario in Study 3 that emphasized that the inefficient allocation option was wasteful. Specifically, to make the waste associated with refusing to allocate more apparent, participants were told that the extra bonus they were asked to allocate was a gift card that was about to expire, and that the gift card would be wasted if not given to anyone. We measured perception of waste to verify that participants indeed found this decision to be wasteful.

Method

Participants. There were 230 participants from the United States (44% females, age ranged from 18 to 73, $M = 33.51$, $SD = 11.73$) who completed a questionnaire on Mechanical Turk for 25 cents. Sixteen additional participants were excluded, because they failed to answer correctly at least one of two comprehension questions. All the effects reported below hold, if these participants are not excluded (see Supplemental Material for the full analysis of the data, not excluding any participants).

Procedure. Participants were randomly assigned to one of six conditions, according to a two-way design with self-disadvantaged (yes or no) and allocation setting (low-partiality, standard-partiality, or high-partiality) as between-participants factors. See Table 2 for a summary of the decision sets in the different allocation settings.

In the standard-partiality conditions, participants in the third-party condition read the following scenario [within each set of brackets, the wording for the third-party condition appears first and the wording for the self-disadvantaged condition appears second]:

> Imagine that you are working at a large company.
>
> You have been asked to decide how to assign a bonus to two employees, [Allison and Jane/Allison and you]. [Allison and Jane/Allison and you] currently make the same amount each year, do the same job, and have received identical evaluations. The company can give a total of 5 gift cards, each in the amount of $50. [Allison and Jane/Allison and you] have each been given two gift cards.
>
> You can either give the remaining gift card to Allison, or give it to [neither of them/neither of you]. The remaining gift card is about to expire, so if no one gets it, it will be wasted. People in the office will likely find out about your decision.
>
> What would you do with the remaining gift card?

Here we predicted the same results as we found in our previous studies, with participants being more likely to opt for efficient inequality in the self-disadvantaged condition than in the third-party condition.

In the high-partiality conditions, participants in the third-party condition were presented with a similar scenario, but were now told the following [within each set of brackets, the wording for the third-party condition appears first and the wording for the self-disadvantaged condition appears second]:

> You have been asked to decide how to assign a bonus to three employees, [Allison, Jane and Juliana/Allison, Jane and you]. [Allison, Jane and Juliana/Allison, Jane and you] all currently make the same amount each year, do the same job, and have received identical evaluations. The company can give a total of 7 gift cards, each in the

Table 2
Decision Sets by Allocation Setting, in Study 3

Allocation setting		
Standard partiality	Low partiality	High partiality
-Give to Allison -Give to neither	-Flip a coin and give to Allison or Jane accordingly -Give to neither	-Give to Allison -Give to Jane -Give to neither

> amount of $50. [Allison, Jane and Juliana/Allison, Jane and you] have each been given two gift cards. You can either give the remaining gift card to Allison, to Jane, or give it to [neither of them/neither of you].

In both conditions, the participants had to choose between three options: giving the card to Allison, to Jane, or to neither (see Table 2). An efficient choice would create an unfavorable comparison to the self in the self-disadvantaged condition but not in the third-party condition. However, unlike in the standard-partiality condition, an efficient choice would appear partial in both conditions because it required picking one recipient over another recipient (i.e., choosing Allison over Jane or vice versa).

In the low-partiality conditions, participants in the third-party condition were presented with a scenario similar to the standard-partiality scenario, but were now told the following [within each set of brackets, the wording for the third-party condition appears first and the wording for the self-disadvantaged condition appears second]:

> You have been asked to decide how to assign a bonus to [two/three] employees, [Allison and Jane/Allison, Jane and you]. [Allison and Jane both/Allison, Jane and you all] currently make the same amount each year, do the same job, and have received identical evaluations. The company can give a total of [5/7] gift cards, each in the amount of $50. [Allison and Jane/Allison, Jane and you] have each been given two gift cards. You can either flip a coin and give the remaining gift card to Allison or Jane, or give the card to neither of them.

Then, participants were asked to choose between flipping a coin and giving the card accordingly to Allison or Jane, or giving it to neither. An efficient unequal choice (i.e., flipping the coin and giving the gift card to the winner) would appear impartial in both conditions because flipping a coin to assign resources between two equally deserving others should always be perceived as impartial.

After making their decisions, participants answered two pairs of questions about fairness and impartiality. The impartiality questions were the same as in Study 2. For the fairness questions, participants were asked to imagine they had decided to give the extra gift card, and to rate how fair other people would think they were. They were then asked to imagine they had decided to give the extra gift card to neither, and to make the same rating of fairness. The fairness scales ranged from 1 (*not fair at all*) to 7 (*completely fair*). The order of these pairs was randomized. Additionally, participants were asked to rate how wasteful giving the gift card to no one was, on a scale ranging from 1 (*not wasteful at all*) to 7 (*highly wasteful*). Participants then completed two comprehension questions and some demographic questions.

Results

Allocation decisions. In the standard-partiality conditions, we replicated the self-disadvantaging effect with this new scenario: Participants were more likely to give the extra gift card to Allison when this choice disadvantaged the self (82%) than when it did not (48%), $\chi^2(1, N = 74) = 9.63$, $p < .01$; $\varphi = 0.36$. In the low-partiality conditions, participants were not any more likely to give the extra gift card to one of the employees according to a coin flip when this choice disadvantaged the self (76%) than when it did not (69%), $\chi^2(1, N = 77) = 0.49$, $p > .40$. In the high-partiality conditions, participants were not more likely to choose to give the extra gift card to Allison or to Jane when this choice disadvantaged the self (49%) than when it did not (45%), $\chi^2(2, N = 79) = 0.19$, $p > .90$. Thus, supporting our theory, the level of partiality associated with the decision setting appears to moderate the self-disadvantaging effect.

Process measures. According to our account, the self-disadvantaging effect was eliminated in the low- and high-partiality conditions because disadvantaging the self did not affect the perceived (im)partiality or fairness of the two allocation options. To test this account, we examined participants' ratings of what others would think of them had they made each type of decision. For each decision setting, we conducted a two-way ANOVA with role (self-disadvantaged or third-party) as a between-participants factor, and with decision (giving the gift card to other(s) or to neither) as a within-participants factor. The dependent measure was ratings of perceived impartiality. In the standard-partiality setting (see ratings in Table 3), we replicate the pattern of findings from Study 2. More important, a significant interaction occurred between condition and decision, $F(1, 72) = 11.66$, $p = .001$, $\eta^2 = .14$. Specifically, when the self was not disadvantaged, participants rated the decision to give the gift card to neither as significantly more impartial than the decision to give the gift card to Allison, $F(1, 72) = 47.13$, $p < .001$, $\eta^2 = .55$, but we find no significant gap when the resulting inequality would have disadvantaged the self rather than someone else, $p > .30$.

In the low-partiality conditions, as predicted, no interaction occurred between condition and decision, $F(1, 75) = 2.39$, $p > .10$. Thus, the two decisions were similarly rated, regardless of whether the self was disadvantaged (see Table 3). In the high-partiality conditions, as predicted, no interaction occurred between condition and decision, $F(1, 77) = 0.47$, $p > .40$. Thus, whereas the two decisions were rated differently, whether or not the self was disadvantaged did not affect the rating (see Table 3).

Next, we tested impartiality as a mediator of the effect of self-disadvantaging on participants' decisions. Because self-disadvantaging affected the decision only in the standard-partiality setting, we ran the mediation only in these conditions. The potential mediator variable was computed as the difference between participants' impartiality ratings of each of the decisions (giving to neither and giving to Allison). First, as we have noted, the experimental condition (self-disadvantaged or third-party) had a significant effect on allocation decisions ($\beta = 0.82$, $p < .01$). Second,

Table 3
Participants' Average Ratings of How Impartial Others Would Think They Are, Depending on Their Decision (Giving to Other(s) or to Neither), in Study 3

	Giving	Neither
Standard partiality		
Self-disadvantaged	3.91 (1.80)	4.47 (2.22)
Third-party	2.53 (1.59)	5.57 (1.65)
Low partiality		
Self-disadvantaged	5.26 (1.86)	4.18 (2.12)
Third-party	5.08 (1.74)	5.13 (2.17)
High partiality		
Self-disadvantaged	2.33 (1.32)	5.44 (1.89)
Third-party	2.53 (1.30)	5.22 (1.85)

Note. *SD*s are in parentheses.

the condition had a significant effect on the appearance of impartiality ($\beta = -1.24$, $p = .001$). Third, in a regression analysis in which appearance of impartiality and condition were tested as predictors of allocation, appearance of impartiality was a significant predictor of allocation ($\beta = -0.34$, $p < .01$), and the condition was a marginally significant predictor ($\beta = 0.58$, $p = .053$). This result indicates that the appearance of impartiality partially mediated the effect. The 95% bias-corrected confidence interval for the size of the indirect effect of condition on allocation through appearance of impartiality excluded zero [0.12, 0.98], suggesting a significant mediation effect. Note that this finding replicates the mediation found in Study 2.

Across all allocation settings, the fairness ratings showed a very similar pattern to the impartiality ratings (see ratings in Table 4). The correlation between the fairness ratings and the impartiality ratings was $r = .66$ ($N = 230$, $p < .001$). More important, for the standard-partiality setting, for fairness ratings as well, we found an interaction between condition and decision, $F(1, 72) = 11.66$, $p = .001$, $\eta^2 = .25$, but not for the low- and high-partiality settings, $F(1, 75) = 2.39$ and $F(1, 77) = 0.03$, respectively, ps $> .10$. Additionally, ratings of fairness mediated the effect in the standard allocation setting. The condition had a significant effect on appearance of fairness ($\beta = -1.51$, $p < .001$). In a regression analysis in which appearance of fairness and condition were tested as predictors of allocation, appearance of fairness was a significant predictor of allocation ($\beta = 0.82$, $p < .01$), and the condition was not a significant predictor ($\beta = 0.43$, $p > .10$). This result indicates that the appearance of fairness fully mediated the effect. The 95% bias-corrected confidence interval for the size of the indirect effect of condition on allocation through appearance of fairness excluded zero [0.31, 1.41], suggesting a significant mediation effect. Therefore, we conclude that participants perceived fairness and impartiality in this context in a similar way; because they correlate at $r = .66$, our analysis does not have sufficient power to distinguish their effects. We will return to this connection between fairness and impartiality in the General Discussion, explaining when we think these two concepts will—and will not—correspond to one another.

Finally, we analyzed participants' ratings of how wasteful the decision was to give the (soon-to-expire) gift card to no one. Participants found this decision very wasteful ($M = 5.94$, $SD = 1.59$), rating it as more wasteful than the midpoint of the scale (4), $t(229) = 18.41$, $p < .001$. Because the ratings did not differ between conditions, $t(228) = 1.93$, $p > .10$, they also could not mediate the effect.

Table 4
Participants' Average Ratings of How Fair Others Would Think They Are, Depending on Their Decision (Give the Extra Gift Card to Other(s) or to Neither), in Study 3

	Giving	Neither
Standard partiality		
Self-disadvantaged	4.88 (2.00)	4.06 (2.13)
Third-party	2.63 (1.61)	4.83 (2.15)
Low partiality		
Self-disadvantaged	5.53 (1.81)	3.55 (2.11)
Third-party	4.64 (2.24)	4.72 (2.27)
High partiality		
Self-disadvantaged	2.56 (1.50)	5.12 (2.12)
Third-party	2.44 (1.32)	5.11 (1.67)

Note. *SD*s are in parentheses.

Discussion

In Study 3, we find important evidence in favor of our impartiality account. Using our standard-partiality setting, we again found that people endorsed efficient inequality much more in the self-disadvantaged condition than in the third-party condition and correspondingly viewed efficient inequality as less partial. When we reduced partiality directly by introducing an impartial procedure, participants endorsed efficient inequality in both third-party and self-disadvantaged conditions and viewed doing so as relatively impartial. When we increased partiality by having participants choose one person over another, participants were less likely to endorse efficient inequality in both the third-party and self-disadvantaged conditions and viewed doing so as relatively partial. In summary, for the standard-partiality setting, in which the decision could be interpreted as either partial or impartial, we found an interaction between condition and decision, but not for the low- and high-partiality settings. These findings support our claim that the self-disadvantaging effect works through reducing concern with partiality.

Study 4a

Studies 1–3 provided evidence for the self-disadvantaging effect, as well as the mechanism for this effect. However, these studies all used hypothetical scenarios that elicited participants' beliefs about how they would respond if they actually faced such decisions. In Studies 4a and 4b, we extended our findings to real behavioral settings. Here, we used situations in which participants' decisions would be of consequence to how other participants were actually paid.

Additionally, the results so far do not establish whether our manipulation increases efficient allocations because the self is disadvantaged by the inequality or because others are *not* disadvantaged by it. That is, people may simply have an aversion to putting anyone other than the self at a relative disadvantage. However, according to our hypothesis, putting oneself in a disadvantaged position should make one more likely to create inequality that disadvantages others as well, because one should be less worried about appearing partial as long as one is disadvantaging oneself at the same time. Studies 4a and 4b were designed to test this hypothesis.

Study 4a was administered to more than 2,000 participants who had taken another online survey. Specifically, participants were asked to vote on whether other participants should be paid the same amount as, or a higher amount than, previous participants were paid. One group of participants (the self-disadvantaged condition) was told that these participants would complete the same task that they have completed. Choosing a higher payment for others would, therefore, put them—as well as the other participants—at a relative disadvantage. The second group of participants (the third-party condition) was told that the next participants would complete a different task. They are considered to be in a third-party role, because they could not directly compare their own outcome to the one on which they were voting, and so by choosing the

higher payment, they would only place other participants (and not themselves) in a disadvantaged position. If people's desire to simply not want to disadvantage others explained our previous results, we should see no difference between these two conditions, because both conditions involved disadvantaging others. However, we predicted that the participants in the self-disadvantaged condition would be more likely than those in the third-party condition to vote for the higher (but unequal) payment for other participants, even though they would be putting others (in addition to themselves) in a disadvantaged position.

We also tested whether the participants' perceptions of how impartial, envious, and generous they would appear to others would mediate their allocation decisions (as in Study 2). Finally, we asked the participants to rate how wasteful the two payment decisions were.

Method

Participants. There were 1,645 participants from the United States (51% females, ages ranged from 18 to 89, $M = 51.44$, $SD = 14.16$) from an online panel maintained by Qualtrics who completed a questionnaire for 75 cents. Based on a predetermined rule (see below), 738 additional participants were excluded, because they failed to correctly answer an attention test. All the effects reported below hold if these participants are not excluded (see Supplemental Material for the full analysis of the data, not excluding any participants).

Procedure. All participants first completed a 20-min survey that included several unrelated studies. Because our study was the final study in this long series of studies, we needed to determine whether participants were still paying attention. Therefore, we used an Instructional Manipulation Check (Oppenheimer, Meyvis, & Davidenko, 2009). Specifically, amid some demographic questions, participants were presented with a question that had four response options, three of which were related to demographics. However, in the instructions of this question, participants were asked to select the fourth option and to type in a specific answer. Thus, only participants who had fully read the instructions would be able to answer this question correctly. We specified ahead of time that we would exclude any participants who failed this attention check.

Following the attention-check question, participants were randomly assigned to either the self-disadvantaged or third-party condition. In the self-disadvantaged condition, participants were asked to vote on the payment for participants who were going to participate in the same survey. This allowed them to readily compare their own payoff to that of the next participants, and by deciding to award a higher payment to others, they would put themselves at a relative disadvantage. In the third-party condition, however, participants were asked to vote on the payment for participants who were going to participate in a different survey, and therefore, could not make such comparisons.

Specifically, in the self-disadvantaged condition ($n = 819$), participants read the following text:

> We are currently facing a dilemma on how to pay other participants who are going to complete the exact same Social Attitudes Survey on a different (non-Qualtrics) online panel.
>
> To help us decide on this matter, we have selected a subset of participants to vote on how future participants in the Social Attitudes Survey will be paid. These voters, like you, have participated in the Social Attitudes Survey. Your vote will remain anonymous and will not affect your payment.
>
> This week, 88 participants have completed the Social Attitudes Survey (including you) and they will all receive a payment of 75 cents. The final 12 participants for the survey are slated to participate next week. We have some money left, so we are considering paying these final 12 Participants 90 cents rather than the 75 cents others receive.
>
> Please cast your vote below, to help determine the payment for these 12 participants in the Social Attitudes Survey. You can vote to make it so everyone is paid 75 cents or that most people are paid 75 cents but the remaining participants are paid 90 cents.

Participants in the third-party condition ($n = 826$) read the same text, except that the first paragraph told them the remaining participants were going to participate in a different study. They were told the following:

> We are currently facing a dilemma on how to pay other participants who are going to complete a different survey on a different (non-Qualtrics) online panel. Participants will be asked to evaluate new products as part of a Product Evaluation Survey.
>
> To help us decide on this matter, we have selected a subset of participants to vote on how future participants in the Product Evaluation Survey will be paid. These voters, like you, have not participated in the Product Evaluation Survey and are, therefore, not involved. Your vote will remain anonymous and will not affect your payment.
>
> This week, 88 participants have completed the Social Attitudes Survey and they will all receive a payment of 75 cents.

Participants in the third-party condition then continued reading the same text that participants in the self-disadvantaged condition read. Next, all participants were asked to vote on the payment for the remaining participants by choosing either a 75-cents option (pay future participants the same as past participants) or a 90-cents option (pay future participants more than past participants). After making their decisions, participants answered the three pairs of questions (taken from Study 2) about impartiality, envy, and generosity. Finally, to test the participants' perceptions of waste in this case, they were asked—either before or after the three pairs of questions—to rate their answer to the question "I think that paying the remaining participants in the Study 75 cents (rather than 90) is . . ." on a scale ranging from 1 (*not wasteful at all*) to 7 (*highly wasteful*).

Results

Allocation decisions. Consistent with our self-disadvantaging hypothesis, participants were more likely to vote to pay future participants 90 cents (instead of 75 cents) when those participants were going to complete the same survey that they had completed (i.e., the self-disadvantaged condition, 52%) than when they were going to complete a different survey (i.e., the third-party condition, 44%), $\chi^2(1, N = 1645) = 10.10$, $p = .001$; $\varphi = 0.08$.

Process measures. To analyze participants' ratings of how impartial, envious, and generous they would appear to others, we conducted a two-way ANOVA with condition (self-disadvantaged

or not) as a between-participants factor and decision (giving a higher payment or not) as a within-participants factor (see ratings in Table 5). For ratings of perceived impartiality, the ANOVA revealed a significant interaction between condition and decision, $F(1, 1643) = 55.07$, $p < .001$, $\eta^2 = .03$. Specifically, when the self was not disadvantaged, the decision to pay the future participants the same was rated as more impartial than the decision to pay them more, $F(1, 1643) = 68.00$, $p < .001$, $\eta^2 = .04$. This gap was much smaller when the resulting inequality would have disadvantaged the self rather than only others, $F(1, 1643) = 5.11$, $p < .05$, $\eta^2 = .003$ (see Table 5). For ratings of perceived envy, the ANOVA revealed a significant interaction between condition and decision, $F(1, 1643) = 42.04$, $p < .001$, $\eta^2 = .03$. Specifically, when the self was not disadvantaged, the decision to pay future participants the same was rated similarly to the decision to pay them more, $F(1, 1643) = 2.35$, $p > .10$, yet when the self was disadvantaged, the decision to pay them the same was rated as more envious than the decision to pay them more, $F(1, 1643) = 113.87$, $p < .001$, $\eta^2 = .07$ (see Table 5). For ratings of perceived generosity, the ANOVA did not reveal a significant interaction between condition and decision, $F(1, 1643) = 0.07$, $p > .70$ (see Table 5).

Next, we tested whether perceptions of impartiality, envy, and generosity mediated the effect of condition on participants' allocations. The three potential mediator variables were computed as the difference between participants' ratings for each pair of decisions on each of the three measures. We tested a mediation model in which all three potential mediators were entered simultaneously. First, as noted earlier, the experimental, self-disadvantaged condition had a significant effect on allocation ($\beta = -0.16$, $p < .001$). The condition had a significant effect only on appearance of impartiality and of envy (βs $= -0.51$ and 0.39, respectively, ps $< .001$). Both impartiality and envy had a unique significant effect on the allocation (βs $= 0.21$ and -0.12, respectively, ps $< .001$). The condition was not a significant predictor of allocation ($\beta = -0.02$, $p > .60$), suggesting a full mediation. The 95% bias-corrected confidence interval for the size of the total indirect effect of condition on allocation through the three components excluded zero [-0.22, -0.12], suggesting a significant mediation effect.

Finally, we analyzed participants' ratings of wastefulness of the decision to pay the future participants the same as past participants, rather than more. Unlike in Studies 1 and 3, participants did not find forgoing paying future participants more than past participants ($M = 2.52$, $SD = 1.55$) to be wasteful, rating this decision as less wasteful than the midpoint of the scale (4), $t(1640) = 38.97$, $p < .001$. Ratings of waste did not differ between conditions, $F(1, 1637) = 1.93$, $p > .10$. In retrospect, we suspect that some ambiguity in the wording of the question about waste might drive these results. Specifically, when evaluating the waste, some participants might have adopted the perspective of the party that was making the payment (the employer in this task), whereas others may have adopted the perspective of the workers.

Table 5
Participants' Average Ratings of What Others Would Think of Them, Depending on Decision (Pay the Future Participants the Same as Past Participants or More), in Study 4a

	Pay more	Pay same
Impartiality		
Self-disadvantaged	4.33 (1.66)	4.11 (1.60)
Third-party	3.82 (1.78)	4.63 (1.66)
Envy		
Self-disadvantaged	2.98 (1.59)	3.89 (1.62)
Third-party	3.29 (1.77)	3.42 (1.71)
Generosity		
Self-disadvantaged	5.30 (1.31)	3.34 (1.39)
Third-party	5.31 (1.37)	3.37 (1.39)

Note. *SD*s are in parentheses.

Discussion

In summary, the results of Study 4a validate the self-disadvantaging effect, using a large sample and a consequential decision setting. In addition, the current findings provide further support for the impartiality account. Perceptions of impartiality fully accounted for the self-disadvantaging effect. Indeed, impartiality also mediated the allocation decisions in Study 2 and the standard-partiality condition of Study 3. Envy mediated the effect in the current study, but not in Study 2. Generosity mediated the effect in Study 2, but not in the current study. When tested separately, impartiality was the strongest mediator in all three studies (see Supplemental Material). Taken together, our findings suggest mixed evidence of the relationship between the self-disadvantaging effect and generosity and envy, whereas they suggest consistent and robust evidence that changes in perceptions of impartiality explain the self-disadvantaging effect.

Study 4b

In Study 4b, we conducted a naturalistic study with past participants in our research lab. We emailed participants who had recently participated in studies in our lab, and told them that we had some extra money and that we wanted them to help us decide how to allocate it. Specifically, we asked participants to vote on whether future participants should be paid the same amount or more than previous participants had been paid. To ensure participants' genuine responses, we did not disclose that our question was part of a study. We again assigned people to the self-disadvantaged condition (that consisted of participants who had previously completed the same study they were voting on) or to the third-party condition (that consisted of participants who had previously completed other studies in the lab, but not the study they were voting on). In line with our previous studies, we predicted the participants in the self-disadvantaged condition would be more likely to choose the efficient allocation (i.e., let other participants earn more than they had earned for the same study) than participants in the third-party condition.

Method

Participants. We emailed 212 students who had participated in a study at our research lab at the university in that quarter. We specified ahead of time that we would conclude data collection exactly 1 week after our initial email. We obtained 107 responses (overall response rate of 50%; 68/117 in the self-disadvantaged

condition and 39/95 in the third-party condition).[4] We did not collect any demographic information from these participants, because we wanted them to feel anonymous (which they were), and to make their response feel more naturalistic, that is, less like an experiment.

Procedure. We sent our emails from the lab's email address to all participants at once. The title of the email was "A quick question from the lab." We manipulated whether or not the participants had participated in the "target study," that is, in the study on which they were asked to vote. In the self-disadvantaged condition, we emailed participants who had participated in the same study, and could, therefore, compare their own payoff to that of the remaining participants, and by deciding to award a higher payment to others, they would put themselves in an unfavorable position (i.e., a relative disadvantage). In the third-party condition, however, we emailed participants who had not participated in the target study, and therefore, could not make such comparisons.

In the self-disadvantaged condition ($n = 68$), participants read the following email:

> Dear student,
>
> Recently, you completed the "Everyday situations study" at our lab at the university (you were asked about common situations you confront in everyday work and school life). We are currently facing a dilemma on how to pay other participants who are going to complete the same study at the lab downtown. To help us decide on this matter, we are conducting a poll among past participants who have completed the same study. You are in no way obligated to respond, but we would very much appreciate your opinion.
>
> Eighty-eight participants have completed the "Everyday situations study" so far (including you) and they have all received a payment of \$2. The final 12 participants for the study are already slated to participate next week. We have some money left, so we are considering paying these final 12 participants \$3 rather than the \$2 others received.
>
> We would appreciate if you cast your vote below, to help determine the payment for these 12 participants. Your vote will remain anonymous. You can vote to make it so everyone is paid \$2 or that most people are paid \$2 but the remaining 12 are paid \$3 for participating in the study.

Participants in the third-party condition ($n = 39$) received the same email, except the first paragraph reminded them they had participated in a different study. Thus, they read the following:

> Dear student,
>
> Recently, you completed the "Purchasing behavior" study at our lab at the university (where you had to write about a purchase you have made). We are currently facing a dilemma on how to pay participants in the lab downtown for a different study, named "Everyday situations," where participants are asked about common situations they confront in everyday work and school life. To help us decide on this matter, we are conducting a poll among participants who have not participated in this study (and are, therefore, not involved). You are in no way obligated to respond, but we would very much appreciate your opinion.
>
> Eighty-eight participants have completed the "Everyday situations study" so far and they have all received a payment of \$2.

Participants in the third-party condition then continued reading the same text as in the self-disadvantaged condition. Finally, all participants were asked to vote on the payment for the remaining participants by clicking on either a \$2 option (pay future participants the same as past participants) or a \$3 option (pay future participants more than past participants). Their response was submitted anonymously through Google Forms and they were asked no further questions. To avoid deception, we paid a specified group of future participants according to participants' voting.

We specified ahead of time that we would collect all responses that arrived within a week. Upon conclusion of the study, we sent a debriefing form to all the students who were asked to participate in this study, informing them that their vote was part of a study, and giving them some information about it.

Results and Discussion

Consistent with our hypothesis, participants were more likely to vote to pay future participants \$3 (instead of \$2) when those participants had completed the same study they were voting on (i.e., the self-disadvantaged condition, 68%) than when those participants had completed a different study (i.e., the third-party condition, 49%), $\chi^2(1, N = 107) = 3.72$, $p = .054$; $\varphi = 0.18$. In other words, participants in the third-party condition who had completed other studies, rather than the target study, were more likely to vote for equal payment for future participants, even though this allocation was inefficient because it left research money on the table. Participants in the self-disadvantaged condition who had completed the target study, and would be disadvantaged by the inequality, were more likely to vote for inequality that resulted in higher total payments for others. This result, obtained with consequential decisions outside the lab, provides validation that our hypothesized effect extends to real behavior.

Study 5

In Studies 4a and 4b, we found that participants were more likely to vote for efficient (yet unequal) options when their decision affected others who completed the same task they had completed themselves than when their decision affected others who completed a different task. We argue that our participants favor efficient outcomes in these self-disadvantaged cases because doing so puts them in a position where they can create efficient inequality without appearing partial.

However, another interpretation of our findings could be that allocators in the self-disadvantaged condition give out more resources because they perceive the recipients as in-group members (because they performed the same task as the allocators), whereas allocators in the third-party condition perceive the recipients as out-group members (who performed a different task than the allocators). Indeed, decades of research demonstrate that people act more favorably toward in-group than toward out-group members (Balliet, Wu, & De Dreu, 2014; Brewer, 1979; Ferguson & Kelley, 1964; Halevy, Bornstein, & Sagiv, 2008; Sherif, Harvey, White, Hood, & Sherif, 1961). In particular, according to social

[4] The response rate differed significantly between conditions (58% in the self-disadvantaged condition, and 41% in the third-party condition), χ^2 (1, $N = 212$) = 6.11, $p < .05$; $\varphi = 0.13$.

identity theory, people tend to create unequal resource allocations between in-group and out-group members, favoring the former even when doing so results in inefficiency (Brewer & Silver, 1978; Tajfel, Billig, Bundy, & Flament, 1971).

To evaluate this alternative explanation, Study 5 explicitly defined the allocator's in-group (i.e., engineers' team) and contrasted it with an out-group (i.e., graphic designers' team). We then manipulated whether the recipients were in-group or out-group members, as well as whether the allocator was a third party (i.e., had not received a bonus for the task in question) or was self-disadvantaged (i.e., had received a bonus for the task in question). If our effect depends on group status, we should not observe the self-disadvantaging effect when the allocator is allocating resources to out-group members (the allocator is expected to disfavor out-group members, if anything). However, according to our account, the self-disadvantaging effect should hold in both cases. In particular, regardless of the recipients' group identity, third-party allocators should be reluctant to give resources to others, because doing so would appear partial, whereas self-disadvantaged allocators should be more willing to create efficient inequality because of reduced concern with appearing partial. In line with previous research, we predict a main effect of in-group favoritism such that people allocate more resources to in-group members. More important, however, we predict the in-group effect will not interact with our self-disadvantaging effect.

Method

Participants. There were 138 participants from the United States (37% females, age ranged from 18 to 74, $M = 30.27$, $SD = 10.44$) who completed a questionnaire on Mechanical Turk for 25 cents. Twenty-three additional participants were excluded, because they failed to correctly answer at least one of three comprehension questions. All the effects reported below hold if these participants are not excluded (see Supplemental Material for the full analysis of the data, not excluding any participants).

Procedure. Participants were randomly assigned to one of four conditions, according to a two-way design with self-disadvantage (self-disadvantaged or third-party) and recipients' group identification (in-group or out-group) as between-participants factors. In the in-group-identification condition, participants read a scenario similar to the one used in the standard-partiality conditions in Study 3 [within each set of brackets, the wording for the third-party condition appears first and the wording for the self-disadvantaged condition appears second]:

> Imagine that you are working at a large company. There are two teams in your company, one team of engineers and one team of graphic designers. Each team works on a different floor of the building and is responsible for different tasks.
>
> You are part of the engineers' team. You have been asked to decide how to assign a bonus to two employees, [Allison and Jane/Allison and you]. Allison is on the engineers' team, [and so is Jane. You are on the engineers' team too/and so are you]. [Allison and Jane/Allison and you] both worked on the same project and have received identical evaluations. The company can give a total of 5 gift cards, each in the amount of $50.
>
> [Allison and Jane/Allison and you] have each been given two gift cards.
>
> You can either give the remaining gift card to Allison, or to [neither of them/neither of you]. The remaining gift card is about to expire, so if no one gets it, it will be wasted.
>
> What would you do with the remaining gift card?

In the out-group-identification condition, participants read the same scenario as those in the in-group condition, except Allison and Jane were described as members of the graphic design team (i.e., out-group) [within each set of brackets, the wording for the third-party condition appears first and the wording for the self-disadvantaged condition appears second]:

> You are part of the engineers' team. You have been asked to decide how to assign a bonus to [two/three] employees, [Allison and Jane/Allison, Jane and you]. Allison is on the graphic designers' team, [and so is Jane/You are on the engineers' team]. [Allison and Jane both/Allison, Jane and you all] worked on the same project and have received identical evaluations. The company can give a total of [5/7] gift cards, each in the amount of $50.
>
> [Allison and Jane/Allison, Jane and you] have each been given two gift cards. You can either give the remaining gift card to Allison, or to [neither of them/none of you].

All participants were asked to choose whether to give the extra gift card (that was going to expire) to Allison or to no one. After making their allocation decision, participants were asked a question to assess the extent of their in-group favoritism. Specifically, we asked, "If you could not get the bonus yourself, and had to give it to a member of one of the groups, who would you give it to—to a member of the engineers' team, or to a member of the graphic designers' team?" Participants then completed three comprehension questions (the first two were used in previous studies, and the additional question tested whether participants remembered the team to which they belonged) and some demographic questions.

Results

Manipulation checks. We examined if our in-group manipulation successfully induced in-group favoritism. A binomial sign test revealed that when participants were asked to choose who would receive an extra bonus, they were more likely to give it to an in-group member (75%) rather than to an out-group one (25%), $p < .001$.

Allocation decisions. Next, we conducted a logistic regression analysis with self-disadvantage (self-disadvantaged or third-party) and recipients' group identification (in-group or out-group) as independent variables and choice as a dependent variable. The regression revealed a marginally significant effect of recipients' identification, whereby participants were more likely to give the extra gift card to Allison when the recipients were in-group members (74%) than when they were out-group members (62%), $\chi^2(1, N = 138) = 3.74$, $p = .053$. The regression also revealed a significant effect of self-disadvantage, whereby participants were more likely to give the extra gift card to Allison when this choice disadvantaged the self (85%) than when it did not (48%), $\chi^2(1, N = 138) = 23.16$, $p < .001$. More important, the interaction between self-disadvantage and the recipients' identification was

not significant, $\chi^2(1, N = 138) = 0.53$, $p > .40$. Indeed, we find a significant self-disadvantaging effect in both the in-group (92% vs. 55%, $\chi^2(1, N = 70) = 12.74$, $p < .001$, $\varphi = 0.43$) and out-group conditions (78% vs. 42%, $\chi^2(1, N = 68) = 9.49$, $p < .01$, $\varphi = 0.37$). This finding suggests that group membership alone does not drive the increased giving produced by the self-disadvantaging effect.

Discussion

Consistent with previous findings in the social identity theory literature (Balliet et al., 2014; Brewer, 1979; Tajfel et al., 1971), we find evidence for in-group favoritism whereby participants are more likely to make efficient (yet unequal) allocations when the recipients are members of their in-group than when they are members of their out-group (regardless of their status as a self-disadvantaged or third-party allocator). However, this effect is orthogonal to the self-disadvantaging effect, and thus, cannot fully account for it. When allocating between in-group members—as well as between out-group members—allocators who are in a disadvantaged position are more likely to make efficient (yet unequal) allocations. These findings imply that the perception of other parties as in-group members does not (exclusively) drive the self-disadvantaging effect found in our previous studies. Thus, the findings of Study 5 rule out an alternative explanation, supporting our proposed account whereby the self-disadvantaging effect works through remedying the allocators' concern with appearing partial.

Study 6

In Studies 1–5, we explored situations in which allocators must choose between assigning additional resources to another person or to no one, and found that people give more to others when they disadvantage themselves. However, in many real-world situations, allocators have another option: giving extra resources to themselves. Would we still observe the self-disadvantaging effect in such cases or would allocators just keep the resource for themselves? The pull of self-interest would certainly lead some people to take the extra resource for themselves in such a situation; however, we predicted that the desire to avoid appearing selfish or biased toward themselves would lead some people to give the resource to the other person even when they had the opportunity to keep it for themselves. In other words, we predicted that (at least some) people would incur (at least some) cost to avoid the appearance of bias.

In addition to examining the role of self-interest, we also wanted to explore the role of agency in creating the self-disadvantaging effect. Building on previous findings on the effect of agency on social preferences (Choshen-Hillel & Yaniv, 2011, 2012), our theory predicts that people should be more likely to favor efficient allocations that place them at a relative disadvantage when they are involved in creating such allocations (i.e., they have agency) than when they are not (i.e., they have no agency). We thus predicted that although people would prefer to give an extra resource to others when they themselves are deciding (i.e., they have agency), they would prefer to receive an extra resource when someone else is deciding (i.e., they have no agency).

To test our predictions, we used the gift-card scenario from Studies 3 and 5, but had participants choose among three options (instead of two). In the agency conditions, third-party allocators could choose between giving the extra resource to one employee (Allison), to another employee (Jane), or to neither, whereas self-disadvantaged allocators[5] could give the gift card to one employee (Allison), to the self, or to neither. In this case, giving the gift card to Allison would create efficient inequality that disadvantages the self. Giving the gift card to the self would also create efficient inequality, but one that *advantages* the self. According to our hypothesis, participants in the self-disadvantaged condition should be more willing than participants in the third-party condition to give the gift card to the other employee.

In the no-agency conditions, instead of making the allocation decisions, participants were asked to imagine that someone else was making the decision about who should receive the resource in question. Thus, third-party allocators were asked which option they would find most satisfying—a manager giving the extra resource to Allison, to Jane, or to neither, whereas self-disadvantaged allocators were asked which option they would find most satisfying—a manager giving the extra resource to Allison, to themselves, or to neither. We predicted that although self-disadvantaged participants would be willing to disadvantage the self in the agency condition, they would actually be more satisfied if a manager advantaged the self rather than the other employee in the no-agency condition.

Method

Participants. There were 220 participants from the United States (45% females, age ranged from 19 to 68, $M = 31.91$, $SD = 10.63$) who completed a questionnaire on Mechanical Turk for 25 cents. Twenty-five additional participants were excluded, because they failed to correctly answer at least one of two comprehension questions. All the effects reported below hold if these participants are not excluded (see Supplemental Material for the full analysis of the data, not excluding any participants).

Procedure. Participants were randomly assigned to one of four groups, according to a two-way design with self-disadvantage (self-disadvantaged or third-party) and agency (agency or no agency) as between-participants factors. In the agency conditions, participants read a scenario similar to the standard-partiality condition in Study 3. The main difference was that the self-disadvantaged condition also had an option of giving the gift card to the self. Participants read the following [within each set of brackets, the wording for the third-party condition appears first and the wording for the self-disadvantaged condition appears second]:

> Imagine that you are working at a large company. You have been asked to decide how to assign a bonus to two employees, [Allison and Jane/Allison and you]. [Allison and Jane/Allison and you] both currently make the same amount each year, do the same job, and have received identical evaluations. The company can give a total of 5 gift cards, each in the amount of $50. [Allison and Jane/Allison and you] have each been given two gift cards. You can either give the remaining gift card [to Allison, to Jane or to neither of them/to Allison, to yourself, or to neither of you]. The remaining gift card is about to

[5] We keep calling this a "self-disadvantage condition" for consistency reasons, even though participants in this condition have the opportunity to either disadvantage or to advantage themselves.

> expire, so if no one gets it, it will be wasted. People in the office will likely find out about your decision.

Participants in the third-party condition were asked to choose whether to give the extra gift card to Allison, to Jane, or to neither. Participants in the self-disadvantaged condition were asked to choose whether to give the extra gift card to Allison, to themselves, or to neither.

In the no-agency conditions, participants read a similar scenario, except they were told that a manager would decide the allocation of resources rather than them. Participants read the following [within each set of brackets, the wording for the third-party condition appears first and the wording for the self-disadvantaged condition appears second]:

> Imagine that you are working at a large company. A manager at the company has been asked to decide how to assign a bonus to two employees, [Allison and Jane/Allison and you]. [Allison and Jane/Allison and you] both currently make the same amount each year, do the same job, and have received identical evaluations. The company can give a total of 5 gift cards, each in the amount of $50. [Allison and Jane/Allison and you] have each been given two gift cards. The manager could either give the remaining gift card [to Allison, to Jane, or to neither of them/to Allison, to you or to neither of you]. The remaining gift card is about to expire, so if no one gets it, it will be wasted. People in the office will likely find out about the manager's decision. The manager has just made the decision about the remaining gift card and the decision is final.

Participants in the third-party condition were asked to indicate whether they would be more satisfied to learn the manager gave the remaining gift card to Allison, to Jane, or to neither. Participants in the self-disadvantaged condition were asked to indicate whether they would be more satisfied to learn the manager gave the remaining gift card to Allison, to them, or to neither. After making their allocation decision, all participants were asked a question to assess the extent to which they felt control over the allocation. Specifically, they were asked "How much control did you feel over the allocation of the gift cards?" on a scale ranging from 1 (*no control at all*) to 7 (*full control*). They were also asked to indicate their answer to the following sentence on a scale ranging from 1 (*no wasteful at all*) to 7 (*very wasteful*): "Giving the gift card to no one would be . . ." Finally, participants completed two comprehension questions and some demographic questions.

Results and Discussion

Manipulation check. We confirmed that participants felt more control over the allocation when they were asked to choose how to allocate the gift cards ($M = 6.01$, $SD = 1.57$) than when they were asked about their satisfaction with another person's allocation ($M = 3.68$, $SD = 2.34$), $t(217) = 8.72$, $p < .001$. This result reveals we successfully manipulated participants' sense of agency in the decision process. Additionally, as in Study 3, participants also rated the decision to give the (soon-to-expire) gift card to no one as very wasteful ($M = 5.75$, $SD = 1.84$), which is more than the midpoint of the scale (4), $t(219) = 14.07$, $p < .001$.

Allocation decisions. Next, we compared participants' choices (see Table 6). A 3×2 χ^2 test revealed self-disadvantage had a significant effect on participants' expressed preferences, $\chi^2(2, N = 220) = 70.46$, $p < .001$, $\varphi = 0.57$, both in the agency condition ($\chi^2(2, N = 115) = 33.81$, $p < .001$, $\varphi = 0.54$) and in the no-agency condition ($\chi^2(2, N = 105) = 41.58$, $p < .001$, $\varphi = 0.63$). To test whether participants in the self-disadvantaged conditions preferred to waste fewer resources than participants in the third-party conditions, we compared the rate of preferring to give the gift card to neither in the different conditions. Indeed, participants in the self-disadvantaged condition expressed a preference for giving the gift card to neither only 16% of the time, whereas participants in the third-party condition expressed a preference for giving it to neither 67% of the time, $\chi^2(1, N = 220) = 59.43$, $p < .001$, $\varphi = 0.52$. The same pattern appears both in the no-agency condition ($\chi^2(1, N = 105) = 30.91$, $p < .001$, $\varphi = 0.52$) and in the agency condition, ($\chi^2(1, N = 115) = 28.23$, $p < .001$, $\varphi = 0.52$).

Table 6
Percentage of Participants Choosing the Efficient But Unequal Allocation to Other [Self], as a Function of Condition, in Study 6

	Setting	
	Agency	No agency
Self-disadvantaged	51% [34%]	13% [71%]
Third-party	34%	33%

To test whether participants in the self-disadvantaged condition wasted less because they chose the efficient unequal option that would advantage them, we compared the rate of creating "nonselfish inequality" between the conditions. The third-party conditions present two options for creating nonselfish inequality: giving the gift card to Allison or to Jane. The self-disadvantaged conditions offer only one option that creates nonselfish inequality: giving the gift card to Allison. We conducted a logistic regression with self-disadvantage (self-disadvantaged or third-party) and agency (agency or no agency) as independent variables and the rate of preferring nonselfish inequality as the dependent variable. The regression revealed a significant effect of recipients' agency, whereby participants were more likely to favor nonselfish inequality when they were involved in creating the allocation (agency, 43%) than when they were not (no agency, 23%), $\chi^2(1, N = 220) = 11.28$, $p < .01$, $\varphi = 0.23$. The regression did not reveal a significant effect of self-disadvantage, $\chi^2(1, N = 220) = 0.54$, $p > .40$. However, the interaction between self-disadvantage and agency was significant, $\chi^2(1, N = 220) = 25.80$, $p < .01$, $\varphi = 0.34$.

We followed up this interaction with a 2×2 χ^2 test. More important, participants were much more likely to favor the option that benefitted someone else in the agency/self-disadvantaged condition (51%) than in the no-agency/self-disadvantaged condition (13%), $\chi^2(1, N = 107) = 17.43$, $p < .001$, $\varphi = 0.40$. Thus, although people prefer to give an extra resource to others when they themselves are deciding, they prefer to receive an extra resource when someone else is deciding. This finding demonstrates the importance of agency to observing the self-disadvantaging effect and also provides some evidence that participants are not simply responding in line with social desirability. That is, because these decisions are hypothetical, one potential concern is that participants are simply telling us what we want to hear and are not responding honestly. However, if all participants'

responses were based on social desirability, we would expect participants to express the same opinion in the no-agency condition—surely, expressing your hope that someone other than you receives a reward is more socially desirable than hoping for that reward for yourself. Thus, whereas participants may generally be less generous toward others when faced with real incentives, our results provide evidence that participants are in fact willing to express selfish desires in our paradigm (indeed, 71% of participants in the no-agency condition said they would be more satisfied if they received more than others). The finding that in the no-agency condition participants assign the bonus to themselves also confirms that participants care about the outcomes in this scenario and are not choosing to disadvantage themselves in the agentic conditions because they are indifferent to the hypothetical outcome.

Additionally, in the agency condition, we find that participants were marginally more likely to give the gift card to someone else when this choice disadvantaged the self (51%) than when it disadvantaged someone else (i.e., third-party condition, 34%), $\chi^2(1, N = 115) = 3.36$, $p = .067$, $\varphi = 0.17$. Thus, in line with our hypothesis, when people are in the agentic role of allocators, they are more willing to create inequalities that favor others over themselves than they are willing to create inequalities as third-party allocators. This effect is smaller than the effects we have seen in our previous studies, because some people indeed choose to advantage themselves when provided with an opportunity to do so. However, we still observe a self-disadvantaging effect even when advantaging others comes at one's own expense.

General Discussion

Our studies provide evidence for a self-disadvantaging effect in resource allocation whereby people are more likely to create inequity to avoid wasting resources when the resulting inequity would put *them* at a relative disadvantage than when it would put only others at a relative disadvantage. In our studies, participants were typically asked to choose between giving some extra resource to one person (thereby creating inequity but distributing more resources) or giving the extra resource to no one (thereby distributing fewer resources but preserving equity). By and large, third-party allocators were reluctant to give the resource to one of the recipients, whereas those who would be disadvantaged by the potential inequity were much more likely to give the extra resource to one of the recipients—favoring efficiency over equity. We find this self-disadvantaging effect in both hypothetical scenarios and consequential decisions.

In addition to demonstrating the existence of this primary effect, our studies provided evidence that its underlying mechanism stems from different beliefs about how others will judge the allocators. Specifically, when participants were third-party allocators, they reported thinking others would judge them as partial and unfair if they shared unequally. By contrast, when participants were allocators whom the resulting inequity would disadvantage, they reported thinking others would not judge them as partial and unfair if they shared unequally. Consistent with our hypothesis, we found that these beliefs mediated the effect of condition on allocation decisions: People in a disadvantaged position were more likely than third parties to believe others would not judge them as partial for creating inequity, and this belief led them to be more willing to create inequity that prevented them from wasting resources. In further support of our hypothesis, the degree of partiality associated with the decision to allocate unequally moderated the self-disadvantaging effect. In settings where creating inequity was not seen as partial (i.e., when one could flip a coin, or when one was forced to choose one party over the other), third-party and self-disadvantaged parties were equally unlikely to waste resources to maintain equity.

Thus, we have specified both mediators and moderators of the basic self-disadvantaging effect in several different contexts. To facilitate comparison of the self-disadvantaging effect across all the studies reported in this article, we conducted a meta-analysis on all conditions in which we predicted a difference (i.e., excluding the low- and high-partiality conditions from Study 3 and the no-agency conditions from Study 6, because we did not predict a self-disadvantaging effect in these conditions).[6] As Table 7 shows, the overall Cohen's d across the six studies was 0.58 (with a range from 0.16 to 0.95), suggesting the self-disadvantaging effect is a robust, medium-sized effect (Cohen, 1988).

The Self-Disadvantaging Effect and the Impartiality Account of Fairness

The current studies provide empirical support for the impartiality account of fairness, which suggests people do not waste resources to avoid inequity per se, but instead dislike inequity because it is often a sign of partiality (Shaw, 2013). The impartiality account argues that people should be quite willing to create inequity (and avoid wasting resources) if the creation of such inequity will not appear partial to others. If, instead, people have an aversion to inequity per se, they should be quite reluctant to create it regardless of what the inequity communicates about the decision maker. In line with the impartiality account, we found that participants readily endorsed inequity when it would disadvantage them, and did not think others would see creating such inequity as unfair, presumably because doing so, if anything, was partial against themselves. Thus, the inequity itself did not drive allocation decisions; rather, what the inequity communicated about the allocator's partiality drove them.

Of course, communicating partiality by creating inequity is not always unfavorable; people generally want to be (and to be seen as) partial to their allies (Shaw, 2013; Waytz, Dungan, & Young, 2013). Further, when one examines people's responses to how their actions will appear to others, a striking correspondence occurs between appearing "impartial" and appearing "fair," suggesting an overlap between these two concepts (see Study 3). This evidence bolsters support for the impartiality account and suggests that one way to reduce waste in the name of equity is to reduce the partiality that unequal sharing often entails.

[6] The analysis was conducted with the Comprehensive Meta-Analysis software (Borenstein, Hedges, Higgins, & Rothstein, 2005). Because our studies used a variety of scenarios and behavioral paradigms to conceptually (rather than directly) replicate the self-disadvantaging effect, we used a random-effects model.

Table 7
Summary of the Self-Disadvantaging Effect in Studies 1–6. Percentage of Participants Creating Inequality by Giving to Other(s), as a Function of Study and Condition

	Self-disadvantaged	Third-party	*N*	χ^2	φ	*d*
Study 1	94%	55%	69	12.54***	0.43	0.95
Study 2	55%	25%	97	9.14**	0.31	0.65
Study 3 (standard partiality)	82%	48%	74	9.63**	0.36	0.77
Study 3 (low partiality)	76%	69%	77	0.49	—	—
Study 3 (high partiality)	49%	45%	79	0.17	—	—
Study 4a	52%	44%	1645	10.10***	0.08	0.16
Study 4b	68%	49%	107	3.72*	0.18	0.38
Study 5 (in-group)	92%	55%	70	12.74***	0.43	0.94
Study 5 (out-group)	78%	42%	68	9.49**	0.37	0.81
Study 6 (no agency)[a]	13%	33%	105	5.38*	—	—
Study 6 (agency)[a]	51%	34%	115	3.36	0.17	0.35

[a] In this study, only nonselfish inequality decisions are reported.
* $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$.

Although previous research on procedural justice is consistent with the impartiality account of fairness, the current work more fully rules out an equity-based explanation. Using impartial procedures removes partiality and, therefore, makes people more tolerant of inequity, so people will favor efficient yet inequitable allocations if these are achieved in a manner that is clearly impartial (Tyler, 1987, 2000). In such circumstances, adults and even children endorse the use of random procedures such as a coin flip or a lottery to determine allocations (Kimbrough, Sheremeta, & Shields, 2014; Shaw & Olson, 2014). However, an equity-based account of fairness can also accommodate these findings. In the case of a coin flip, the allocator might consider that each recipient received a payment in the form of a chance to win the resource in question. That is, being involved in the coin toss is like receiving a lottery ticket ex ante. By this logic, the use of coin flips to assign such resources is consistent with both the equity and impartiality accounts of fairness. The self-disadvantaging procedure clearly rules out any possible explanation based on equity (because the allocation in the self-disadvantaged condition is just as inequitable as the allocation in the third-party condition) and provides direct support for the impartiality account of fairness because differing perceptions of partiality mediate and moderate the self-disadvantaging effect.

The procedural justice literature has indeed recognized impartiality as an important factor (e.g., Tyler, 2000). However, impartiality has received less attention in explaining people's distributive preferences. Whereas procedural justice refers to people's evaluation of the fairness of the *mechanisms* or procedures involved in the allocation, distributive justice refers to people's evaluation of the fairness of the *outcomes* of the allocation (whether or not they reflect the parties' input; Cook & Hegtvedt, 1983; Folger, 1977; Hsu, Anen, & Quartz, 2008; Leventhal et al., 1973; Thibaut & Walker, 1975). Our current findings support the idea that impartiality may also underlie some of our intuitions about distributive justice. Inequity aversion is normally thought of as reflecting distributive-justice concerns—people wish to see equal parties obtain equal outcomes. However, our findings suggest preferences for procedural justice and more specifically the partiality of those procedures also shape inequity aversion; the way people view inequitable outcomes depends to a large extent on their role in the allocation and how this role influences the implied partiality entailed by inequity (i.e., procedural considerations). Indeed, when the allocator is in a third-party position (i.e., her decision affects only others), she (as well as others) is likely to interpret inequity in a negative manner because such allocation would imply her partiality. However, when the allocator is in a position where choosing an inequitable allocation would create a relative disadvantage to herself (i.e., by allocating more to others and creating an unfavorable social comparison to herself), inequity is not perceived as negatively, because it does not signal partiality. Thus, our work expands our understanding of existing literature in suggesting that concern with the appearance of partiality is an underlying component affecting distributive as well as procedural justice. More broadly, our findings support the idea that both distributive and procedural justice concerns interact in determining people's fairness judgments (van den Bos, Vermunt, & Wilke, 1997).

Note that we have been discussing our results in terms of people wanting to avoid *appearing* partial to others, but people can also want to avoid actually *being* partial. Of course, these two concerns can sometimes be at odds with each other and people will often *be* unfair and ungenerous if they can do so without *appearing* unfair or ungenerous to others (Andreoni & Bernheim, 2009; Dana, Cain, & Dawes, 2006; Dana, Weber, & Kuang, 2007; Levitt & List, 2007). The present studies are agnostic to this question. We have shown that people are concerned with partiality; whether this is because they actually want to *be* or merely want to *appear* impartial is beyond the scope of this article. One reason our results do not speak to this question is that our participants' decision was typically not costly to the self, and so we would not expect much divergence between people's private and public decisions. We would expect much larger differences between people's private decisions (what they actually want) and their public decisions (how they want to appear) if their decision involved some personal cost.

One additional prediction that the impartiality account of fairness makes is that avoiding the appearance of partiality can sometimes lead to biased decision making. Although pursuing

impartiality will often lead to less bias because it will force individuals to counteract their inherent in-group bias and favoritism toward their allies, in some circumstances it may lead people to be biased against their in-group members or friends. Consider again our aforementioned lab manager, who now believes Jane has done a better job than Heather and, therefore, wishes to reward Jane with the better computer. If the lab manager's reasons for rewarding the parties differently are not transparent to outside observers (e.g., they are based on a subjective evaluation of what constitutes good work), and especially if the manager might be viewed as showing favoritism to this party (e.g., she is a good friend of Jane), the allocator might opt to reward the parties equally to avoid appearing partial. Indeed, in some cases, one's desire to appear impartial may lead one to inappropriately undercompensate one's friends and allies (Shaw, Choshen-Hillel, & Caruso, 2015).

Implications of the Self-Disadvantaging Effect for Public Policy

As we reviewed previously, the tension between efficiency and equity lies at the heart of many choices, from trivial decisions about who gets a final piece of pizza to important public policy decisions about who gets an organ transplant. Just as individuals do, societies and organizations routinely face this difficult tradeoff between equity and efficiency (Okun, 1975). Although using a random device or procedure can sometimes provide a practical solution to this type of problem, using it is not always possible and not always acceptable (Keren & Teigen, 2010; Oberholzer-Gee, Bohnet, & Frey, 1997), and therefore, exploring other practical solutions to this conflict is worthwhile.

Furthermore, we found the self-disadvantaging effect in circumstances that mirror such public policy contexts. Specifically, in Studies 4a and 4b, we found that even when inequity would disadvantage many others, decision makers who would disadvantage themselves by creating inequity were more likely to vote for efficient inequity than were third parties, because they were less worried about being seen as partial. Thus, having "objective" third-party allocators make policy decisions may sometimes lead to waste in the name of fairness, and empowering self-disadvantaged parties might be a powerful tool to reduce this waste. This finding thus provides a new perspective on the advantages of public participation (Rowe & Frewer, 2000).

How can policymakers use this insight to improve the allocation of resources? Note first that we do not advise third-party policymakers to change their policy and act like a potentially disadvantaged party. If third-party decisions makers gave more weight to efficiency considerations and created inequitable allocations, the result would be large costs—to their own reputation, as well as to the disadvantaged parties who respond quite negatively to inequity created by third parties (Dawes et al., 2007; Loewenstein et al., 1989; Tricomi et al., 2010). We do recommend, however, that third-party policymakers looking to reduce inefficiency find ways to empower potentially disadvantaged allocators to make such allocations themselves, *instead* of the policymakers. Handing over the decision to disadvantaged allocators will increase the chance that resources will be allocated efficiently and increase the perceived fairness of the allocation itself. By empowering disadvantaged parties, policymakers can create a "win–win" situation that enables more efficient allocations while avoiding dissatisfaction with the resulting inequity (Choshen-Hillel & Yaniv, 2011, 2012).[7]

Consider the following illustration of how this recommendation could work. Nowadays, many organizations (e.g., sports teams, businesses, and universities) face a dilemma when changes in the market lead new employees in an organization to receive a higher salary than some current employees who do the same job (e.g., Bidwell, 2011). Managers might want to offer these higher salaries to attract the best new employees in the market. However, if they decide to do so, they might offend the existing employees, who could end up earning less than the new—and possibly less competent—employees. If the organization wants to promote offering such incentives to new talent, our research suggests that rather than asking the managers (who would be third parties) to make this decision, the company should instead ask the existing employees (who will keep their current salaries and be at a relative disadvantage compared with their new counterparties) to take part in this decision. Anecdotally, this scenario is precisely what happened in a prominent U.S. business school whose administration faced a similar dilemma in which the salaries for new faculty members in the market were higher than those of current junior faculty. Instead of making the decision themselves, the school administration asked the faculty to vote on the salary for the new faculty. Consistent with our hypothesis, the current faculty voted in favor of awarding the new faculty higher salaries. The administration could, therefore, more easily endorse the efficient policy and avoid the downsides of inequity.

Boundary Conditions for the Self-Disadvantaging Effect

Of course, several factors influence people's allocation decisions, only one of which is a concern with avoiding the appearance of partiality; therefore, the self-disadvantaging effect should have several boundary conditions. First, people's desire to maximize their own resources should influence their decision making. Our studies establish that people may willingly sacrifice some resources by putting themselves at a relative disadvantage or incurring a small personal cost to benefit others (Study 6; see also Charness & Rabin, 2002; Choshen-Hillel & Yaniv, 2011). However, our theory predicts that as the personal cost to the decision makers increases, their tendency to opt for disadvantaged (efficient) allocations should decrease. For example, employees whose bonuses cannot increase are likely to vote for higher bonuses for other employees if doing so simply puts them at a relative disadvantage, but they would likely vote against such increases if they had to give up some of their own bonus to cover others' higher bonuses.

Second, the opportunity to *advantage* the self by creating inequity could moderate the self-disadvantaging effect. On the one hand, allocators who could choose to take some benefit for the self might be even more worried than third-party allocators about

[7] Of course, if an organization would prefer to keep the resources for the organization rather than distribute them, asking disadvantaged parties to make the allocation would not be advisable.

appearing partial, and hence less willing to create such inequity. On the other hand, the material incentive of gaining more for the self may lead them to opt for efficient allocations that favor themselves. Research suggests children in this situation will throw away their own resources to avoid appearing partial when others will know their decision (Shaw & Olson, 2012), but not when others will be unaware of their decision (Shaw et al., 2014)—suggesting they may be more concerned with appearing rather than just being impartial in such cases. Future research is needed to examine how adults balance this equity-efficiency tradeoff in circumstances in which the potential inequity benefits them.

Third, our theory predicts the self-disadvantaging effect should depend on the allocator's sense of agency over the outcomes. Study 6 provides a first demonstration of this boundary, finding that compared with agentic participants, nonagentic participants prefer allocations that advantage the self to those that disadvantage the self. Furthermore, we expect agency to limit the self-disadvantaging effect even when one cannot advantage oneself, but can merely choose between an inefficient equitable option and an efficient inequitable one, because lacking agency makes people heavily susceptible to social comparison and envy (Choshen-Hillel & Yaniv, 2011, 2012; Folger, 1977; Folger, Rosenfield, Grove, & Corkran, 1979), whereas having agency motivates decision makers to act more generously and maximize social welfare (Choshen-Hillel & Yaniv, 2011, 2012; Handgraaf, Van Dijk, Vermunt, Wilke, & De Dreu, 2008; Harbaugh, Mayr, & Burghart, 2007; Hideg, Michela, & Ferris, 2011; van Dijk & Vermunt, 2000). Consequently, potentially disadvantaged parties who do not feel in control of the outcomes should find the relative disadvantage to be aversive, and be more likely to opt for equitable (and wasteful) allocations. Such behavior is often evidenced in economic games such as the ultimatum game (in which recipients with no control over the amount proposed routinely reject offers they view as unfair; see Camerer, 2003) and in giving/taking games (in which disadvantaged parties will incur a personal cost to make randomly determined income distributions more equitable, thereby wasting resources to promote equality even under conditions of impartiality; Dawes et al., 2007).

Finally, we expect the distributive versus integrative potential of the decision to moderate the self-disadvantaging effect. We deliberately only examined contexts in which the decision was nonzero-sum, so that opting for inequity did not make anyone earn less. However, people do prefer distributions that do not harm the welfare of those who have very little (e.g., Charness & Rabin, 2002). Research has shown that these "maximin" preferences exert a powerful influence on decision making, above and beyond the influence of overall "equity" or "partiality" (Mitchell et al., 1993). Thus, in contexts in which creating inequity would violate maximin preferences, we suspect people would be reluctant to create inequity even if it was reached in an impartial manner.

Final Remarks

Making resource-allocation decisions is often a challenging task (e.g., Rawls, 1971; Sen, 2009). People frequently face tradeoffs between equity on the one hand and efficiency on the other (Bar-Hillel & Yaari, 1993; Hsu et al., 2008; Messick, 1995; Mitchell et al., 1993; Okun, 1975). They must consider both the distributive and the procedural aspects of the allocation (Cook & Hegtvedt, 1983; Tyler, 2000). They must also weight their own perspective as well as those of others (Epley, Caruso, & Bazerman, 2006). Indeed, driven by many different forces, people's allocation decisions may sometimes seem inconsistent, and people's notion of fairness nebulous. However, relatively simple psychological primitives can often explain these ostensibly disparate decisions—it is just a matter of discovering what these primitives are. Here, we suggest the concept of impartiality is one such primitive that influences what makes an allocation seem fair or not. We find that changing the implied partiality of an allocation drastically changes people's preference for, and reaction to, inequitable allocations. We believe this finding gets us one step closer to understanding people's beliefs about what constitutes a fair allocation decision, and this understanding can be used to improve allocation policies and to further reveal the psychological primitives that underlie people's decisions about what, when, and with whom to share.

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