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Leaving with something: When do people experience an equity–efficiency conflict?

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Abstract

When allocating resources, people often have to resolve a conflict between equity and efficiency concerns. That is, sometimes for everyone to receive the same amount of resources, some resources must be used suboptimally. However, it is unclear whether and how people account for the impact their allocation decisions would have on the recipients' outcome. In three experiments, we examine how the amount of resources allocated to the recipients influences allocators' decisions and use mouse tracking techniques to assess their conflict during the decision process. The results reveal that when an equitable allocation of resources led to neither recipients receiving anything nor imposed losses, people tended to prefer efficient allocations. Such allocations between recipients who may end up with no resources also evoke a greater conflict compared with allocations in which both recipients have some secured gains, suggesting that, in general, people want to be equitable but not when equity means that nobody gets anything. When maintaining equity can only be done by leaving recipients with no resources at all, equitable allocations evoke a greater conflict, and people are more likely to refrain from them.

KEYWORDS

efficiency, equity, mouse tracking, process tracing, resource allocation

1 | INTRODUCTION

Policymakers, managers, and parents, among others, often face the dilemma of how to allocate resources among different recipients. Imagine, for example, a manager who at the end of the year has a number of gift cards worth $50 each to give to her employees. Imagine first that she has two employees but only one gift card—should she give one employee the gift card and leave the other with nothing, or should she decide not to give anyone a gift card, thus leaving them both with nothing? Now, imagine she has two employees but five gift cards. She gives each employee two gift cards and once again has to decide what to do with the one remaining gift card. Would her decision be different than the one in the former scenario? In these scenarios, the manager is faced with a dilemma between equity and efficiency: she has to decide between being equitable (both parties get equal amounts of gift cards) and efficient (all gift cards are allocated).

People care about equity[1] and dislike situations in which some people unjustifiably get more than others (e.g., Adams, 1965; Baumard, Mascaro, & Chevallier, 2012; Cook & Hegtvedt, 1983; Dawes, Fowler, Johnson, McElreath, & Smirnov, 2007; for a review, see Zheng, Yang, Jin, Qi, & Liu, 2017). People are averse to outcomes that deviate from equity, regardless of whether that inequity is advantageous or disadvantageous for them (Bolton & Ockenfels, 2000; Fehr & Schmidt, 1999; Loewenstein, Thompson, & Bazerman, 1989),

[1]Equality means equal allocation among recipients irrespective of their inputs, efforts, or merits, whereas equity means allocating resources based on previous achievements, inputs, or efforts (Deutsch, 1975; Mannix, Neale, & Northcraft, 1995). Our work focuses on the specific case where two recipients are similarly deserving, and there is no justification to give one of them more than the other, and equal allocation would also be the equitable allocation.

and are willing to pay out of their own endowment in order to take away resources held by those who unjustifiably receive more than others (Dawes et al., 2007).

Equitable solutions, however, are sometimes inefficient (Okun, 1975). That is, such solutions sometimes require a suboptimal use of the resources available. In these cases, allocators must choose between equitable yet inefficient and inequitable but efficient resource allocations. Here, we use the term efficiency to mean "surplus maximization" (Bolton & Ockenfels, 2000), that is, maximization of the total amount of resources in use. For example, if one has to choose if she wants to give a prize of $100 to John, to Jane, or to neither of them, an allocation of the money to only one of them would be inequitable if they are both entitled for the reward, but a decision not to give the reward to either of them will be inefficient, as "some money is being left on the table."

Such conflict between equity and efficiency exists in areas such as taxation policy (Ballard, 1988; Greenwald & Stiglitz, 1986), allocation of medical resources (Ubel & Loewenstein, 1996), and organizational budgetary decisions (Wayne & Rubinstein, 1992). Indeed, both children (Shaw & Olson, 2012) and adults (Choshen-Hillel, Shaw, & Caruso, 2015; Gordon-Hecker, Rosensaft-Eshel, Pittarello, Shalvi, & Bereby-Meyer, 2017; Shaw & Knobe, 2013; for a review, see Gordon-Hecker, Choshen-Hillel, Shalvi, & Bereby-Meyer, 2017) destroy or discard resources in order to prevent unequal allocations, suggesting that people will go to great lengths to maintain equity. How far exactly? We suggest that the answer to this question depends on the amount of resources the recipients can end up with. Specifically, we examine the extent to which the preference for equitable, yet inefficient distributions, changes as a function of the amount of resources allocated to the recipients, and how this preference for equity over efficiency is reflected in the conflict people feel when making these decisions.

1.1 | The value of a single resource

Consider the manager from the opening scenario who faces two dilemmas—allocating one gift card between two employees and allocating five gift cards between two employees. In both cases, her decision revolves around the allocation of a single gift card, whereas in the latter case, each employee ends up with at least two gift cards, regardless of her allocation decision. Hence, the already allocated gift cards, or the minimal allocation each employee receives, may strongly affect her decision.[2] We suggest that the value of the supplementary resources is evaluated relative to this minimal allocation.

How should the minimal allocation affect allocators' decisions? According to prospect theory (Kahneman & Tversky, 1979), as well as commodity theory (Brock, 1968; Lynn, 1991), a resource is perceived as less valuable when it is added to previously possessed resources of the same kind. According to those theories, resources have a diminished marginal utility, and evaluations of the resources are greatly affected by the value to which they are compared. Winning $50 will make you happier if it is your only prize, compared with when it is added to a previously earned $100. Hence, when the minimal allocation is low, the allocation of the supplementary resources holds a greater value, and vice versa.

The difference in the perceived value of the resources being allocated may influence the allocators' decision in at least two ways. On the one hand, as the value of the resource increases, so does the deviation from equity, leading to more negative feelings (Walster, Berscheid, & Walster, 1973) and reducing people's utility from the proposed allocation (Fehr & Schmidt, 1999). Hence, we might expect that people will be more likely to choose equity over efficiency as the value of the resource increases. On the other hand, when highly valuable resources are at stake, maintaining equity requires a large waste of resources, a situation in which people favor efficiency over equity (Bar-Hillel & Yaari, 1993). Such findings might explain why allocations of scarce resource, which are perceived to have a greater value, increase allocators' efficiency concerns (Skitka & Tetlock, 1992). Thus, when increasing the value of the resource, the aversiveness of both inequity and inefficiency increases. The question arises—would people be willing to create a big payoff difference to avoid a vast waste, would people be willing to discard a highly valuable resource to avoid a big payoff gap, or would those two effects cancel each other out? We test these three possibilities in Experiment 1.

1.2 | Allocations of losses—Effects of the domain

Because we base our research question on prospect theory's value function (Kahneman & Tversky, 1979), we have to consider that a diminished marginal utility is only one premise of that function. The other premise is that "losses loom larger than gains" (Kahneman & Tversky, 1979); that is, the value function is steeper for losses than for gains. Therefore, we additionally examine whether allocations of losses would moderate the effect of the minimal allocation on the preference for equity over efficiency.

In allocation decisions, people are sometimes asked to allocate losses and not gains. Imagine, for example, a company undergoing budget cuts. The manager can worsen the working conditions in one of the departments, which would be sufficient, or she can choose to worsen the working conditions for all employees of the company. In the latter case, she would inflict unnecessary losses for the sake of equality among all employees. Here, we examine the unique case of allocations that result in negative utility, that is, allocations of losses. We examine whether allocators display a diminished marginal utility also for losses and have different preferences for equity over efficiency or vice versa as a function of the losses suffered by the recipients regardless of their decisions.

Generally, "losses loom larger than gains," and people display greater affective responses to losses than to equally sized gains (Kahneman & Tversky, 1979). Indeed, when allocating resources, people react more strongly to a deviation from the status quo for losses than for gains (Northcraft, Neale, Tenbrunsel, & Thomas, 1996), and

[2]Here, we use the term "minimal allocation" to describe the minimum amount of resources a recipient can receive.

they pursue equity more when allocating burdens as opposed to benefits (Sondak, Neale, & Pinkley, 1995). However, when equity conflicts with efficiency, as noted above, maintaining equity in losses requires producing more losses in order to ensure everybody loses equally, which seems improbable given the aversiveness of losses. Because the value function is steeper for losses than for gains, we expect that when allocating losses, people will be less affected by the minimal allocation and more likely to be efficient overall (albeit inequitable) than when allocating gains.

1.3 | Overview of current experiments

In three experiments, we tested how the minimum amount of resources a recipient can receive (i.e., the minimal allocation) influences people's preference for efficient versus equitable alternatives. In all experiments, participants made repeated allocation decisions that affected others' outcomes. In high-minimal-allocation trials, both allocations ensured that each recipient was endowed with a relatively high amount of resources. Participants had to choose between an efficient yet inequitable allocation, such as five goods for A and four goods for B, versus an inefficient yet equitable allocation of four goods for A and four goods for B. In low-minimal-allocation trials, at least one of the recipients ended up with nothing, and participants had to choose between allocations such as one good for A and no goods for B versus no goods for A and no goods for B. Experiment 1 examined the effect of the minimal allocation on allocators' preference for equity over efficiency in allocations of losses and gains. Experiment 2 assessed allocators' conflict when allocating gains as a function of the minimal allocation. In Experiment 3, based on the findings from the previous two experiments, we measured both the behavior and the conflict that allocators exhibited when allocating resources between recipients with different levels of minimal allocations, both when allocating gains and when allocating losses.

We report all measures, experimental manipulations, and exclusions in the main text and the Supporting Information. All the analyses were conducted only after completion of the entire data collection. The data for all the experiments can be downloaded from https://osf.io/esd3c/

2 | EXPERIMENT 1

In Experiment 1, we examined whether resources that are highly valuable, as they are evaluated against a low-minimal allocation, are allocated more or less efficiently. Participants made nine allocation decisions in which they distributed points between two other participants. For each participant, we systematically varied the minimal amount of points allocated to each recipient and asked participants to choose between an efficient yet inequitable option and an inefficient yet equitable option. In Experiment 1, we further manipulated between participants two additional factors. First, we varied the domain of the allocation by manipulating whether participants had to allocate points (gain) or deduct points (loss) (Andreoni, 1995; Tversky & Kahneman, 1981). Second, because previous findings reveal that people choose equity over efficiency only when they must determine themselves how the inequity is to be implemented (Gordon-Hecker, Rosensaft-Eshsel, et al., 2017), we included a condition in which participants could use a random device (i.e., a coin toss) to determine which of the recipients would receive more than the other.

2.1 | Method

2.1.1 | Participants

Two hundred five students (156 females, M_{age} = 23.12, SD_{age} = 1.34) participated in the experiment in exchange for course credit. A sensitivity analysis revealed that this sample size had a power of 80% to detect a small effect size (f = .09), with α = .05. For a further discussion on the sensitivity analysis, see the Supporting Information.

2.1.2 | Procedure

Participants arrived at the lab in groups of up to six people. Each participant was seated in front of a computer and was asked to complete several tasks. Participants were told that they were assigned to the role of the allocator and needed to decide how to allocate points between two other participants, who were not present in the lab at the time of the study. Participants were told that after data collection would be completed, the experimenter will compute the amount of points given to each recipient by all allocators and that each 20 points would be exchanged for a voucher for coffee and pastry at the university cafeteria, valid for several months. Participants were told that all the vouchers had been prepurchased and that any vouchers that would not be given to the recipients would be discarded. Participants were further told that in each trial, they would allocate points among different recipients and that all of their decisions will be implemented. Throughout the experiment, participants were encouraged to think of the allocated points as having actual monetary value. Participants were informed that both their identity and the identity of the recipients will be kept completely private.

Participants engaged in nine trials of allocation decisions. In each trial, participants saw two allocation options on the computer screen, illustrating in parentheses the amount of points allocated to each recipient. For example, participants were asked to choose between (2,2), which meant an equitable allocation in which both recipients would receive 2 points, and (5,2), which, as is customary assumed in economic research (e.g., Charness & Rabin, 2002), meant an efficient allocation in which one recipient would receive 5 points and the other would receive 2 points. Participants saw the two numerical allocation alternatives in such way they were able to infer which of the two is more equitable and which is more efficient. Each recipient was identified only by a participant number (a three-digit random number).

Within participants, we manipulated the minimal allocation (i.e., minimum amount of resources a recipient can receive) to be 0 versus 2 versus 4. For example, for a choice between (0,0) and (0,5), the minimal allocation was 0, whereas for a choice between (4,4) and (4,5), the minimal allocation was 4. To diversify the trials participants engaged in, we further varied the difference in the number of goods between the equitable alternative and the efficient one, that is, the cost of choosing the equitable alternative to be 1 versus 3 versus 5. For example, when choosing between (0,0) and (0,5), opting for an equitable option (0,0) meant inefficiently discarding 5 points, but opting for the efficient solution (0,5) meant creating a gap of 5 points between the parties.

Between participants, we further orthogonally manipulated two factors. First, we varied the domain of the allocation to be allocating gains versus allocating losses for the other people. In the gain condition, participants were not given any information regarding the recipients' current endowment and were asked to allocate points between the two recipients. In the loss condition, participants were told they had to allocate losses between two recipients who earned a certain amount of points (unknown to the allocators) and were asked to subtract points from the two recipients.

Further, between participants, we manipulated who decided which of the two recipients would get less than the other: the allocator (in the human condition) or a random device (in the random condition). Participants were asked to choose one of the two allocations on the screen. Participants in the human-allocation condition were told that if they would choose an unequal allocation, they will be asked to specify which participant should get more than the other. Participants in the random-allocation condition were told that if they would choose an unequal allocation, the computer would randomly decide which recipient would get more than the other.

In summary, the complete experimental design included the within factors of minimal allocation (0 vs. 2 vs. 4) and cost of equity (1 vs. 3 vs. 5), and the between factors of domain (gain vs. loss) and the type of allocator (human vs. random). The complete list of trials appears in Table 1.

Finally, for exploratory purposes, participants completed the Positive Affect and Negative Affect Survey (PANAS; Watson, Clark, & Tellegen, 1988), 10-item Rational-Experiential Inventory (REI-10; Epstein, Pacini, Denes-Raj, & Heier, 1996), and the Short Schwartz Values Survey (SSVS; Lindeman & Verkasalo, 2005).

The experiment did not involve any deception of participants, and the vouchers were indeed given to the recipients based on their accumulated number of points. All analyses here, and in all subsequent experiments, were conducted using IBM SPSS statistics 20 software.

2.2 | Results

Results show that people tend to be more efficient when the minimal allocation is low, and specifically, when it is zero. We ran a generalized linear mixed-model logistic regression with allocator type (coded 0 = random allocation, 1 = human allocation), domain (coded 0 = loss, 1 = gain), minimal allocation (0, 2, and 4), cost of equity, and all of their interactions as predictors for the likelihood of choosing the efficient yet inequitable allocation with a random intercept for participants and a logit link function. The analysis takes into account that the between-subjects results are nested within the allocators' repeated decisions. We used Bonferroni correction to account for the multiple comparisons.[3]

The analysis revealed a main effect for the minimal allocation, $F(2, 1{,}838) = 18.43$, $p < .001$; see Figure 1. Allocators were more likely to choose the efficient yet inequitable option when the minimal allocation was 0 (64.55%, 397 of 615) than when it was 2 (53.98%, 332 of 615; $t(1{,}838) = 4.90$, $p < .001$, $b = .17$, 95% CI [.094, .253]) or 4 (52.36%, 322 of 615; $t(1{,}838) = 5.65$, $p < .001$, $b = .20$, 95% CI [.116, .288]). The effect for the minimal allocation, however, was qualified by a domain × minimal allocation interaction, $F(2, 1{,}825) = 4.40$, $p = .012$. In the gain domain, the pattern of results mirrored the main effect: allocators were more likely to choose efficient inequity when the minimal allocation was 0 (65.70%, 203 of 309) than when it was 2 (48.87%, 151 of 309; $t(1{,}825) = 5.34$, $p < .001$, $b = .27$, 95% CI [.157, .385]) or 4 (47.25%, 146 of 309; $t(1{,}825) = 5.99$, $p < .001$, $b = .30$, 95% CI [.182, .423]). However, in the loss domain, there was no effect of minimal allocation: allocators were similarly likely to choose efficient inequity when the minimal allocation was 0 (63.40%, 194 of 306), 2 (59.15%, 181 of 306; $t(1{,}825) = 1.60$, $p = .221$), or 4 (57.52%, 176 of 306; $t(1{,}825) = 2.07$, $p = .115$).

TABLE 1 Experimental trials in Experiment 1

	Cost of equity					
	Gain			Loss		
Minimal allocation	1	3	5	1	3	5
0	(0,0) vs. (1,0)	(0,0) vs. (3,0)	(0,0) vs. (5,0)	(−1,0) vs. (−1,−1)	(−3,0) vs. (−3,−3)	(−5,0) vs. (−5,−5)
2	(2,2) vs. (3,2)	(2,2) vs. (5,2)	(2,2) vs. (7,2)	(−3,−2) vs. (−3,−3)	(−5,−2) vs. (−5,−5)	(−7,−2) vs. (−7,−7)
4	(4,4) vs. (5,4)	(4,4) vs. (7,4)	(4,4) vs. (9,4)	(−5,−4) vs. (−5,−5)	(−7,−4) vs. (−7,−7)	(−9,−4) vs. (−9,−9)

[3]Here, and in all subsequent mixed-model analyses, we ran separate models for the main effects and for the interactions. Specifically, we first ran a model with only the main effects as fixed factors, and we report the main effects derived from this model. Next, we ran an additional model with main effects and their two-way interactions and report only the interactions derived from this model. Finally, we added the three-way interactions to the final model and report only the three-way interactions derived from the third, final model.

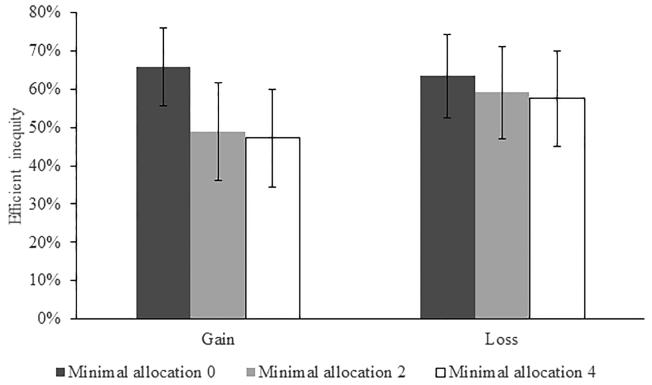

FIGURE 1 Results from Experiment 1: The likelihood of choosing efficient inequity in the different minimal allocation and domain conditions, aggregated across all other experimental factors. Error bars denote 95% CI (model based)

The analysis revealed no main effect for type of allocator and cost of equity nor interactions other than the one reported, F's < 1.76, p's > .172. Additionally, we found no effect for participants' values as measured by the SSVS, no effect for their need for cognition and faith in intuition as measured by the REI-10, and no effect for positive or negative affect as measured by the PANAS. We report these results in the Supporting Information.

2.3 | Discussion

Results of Experiment 1 suggest that when allocating gains, people tend to be more efficient when the minimal allocation is zero and reveal that equity is pursued more when both recipients receive at least some resources in the allocation regardless of the allocator's decision, that is, when the minimal allocation is greater than zero. When deciding between equity and efficiency, participants seem to have more difficulty wasting the only available resource in order to maintain equity than wasting an additional resources when some resources had already been distributed. This finding is in line with work suggesting that the value zero, or "nothing," has unique characteristics and is qualitatively different from other values (e.g., Palmeira & Srivastava, 2013; Shampanier, Mazar, & Ariely, 2007). For example, people experience payment as more aversive if it exhausts their entire budget than when the same amount is only a fraction of their entire budget (Soster, Gershoff, & Bearden, 2014). Similarly, the endowment effect (i.e., the tendency to demand a higher price for an owned good than the willingness to pay for that same good; Thaler, 1980) is present only when sellers sell their whole endowment and end up with nothing but not when they sell only a portion of their entire endowment (Schurr & Ritov, 2013).

According to economic models, what matters most to people is not their current state of wealth but their relative change of wealth (Camerer, 2019). Indeed, results of Experiment 1 suggest that allocators are more likely to deviate from equity in order to change one recipient's condition from "having nothing" to "having something" than from "something" to "something more." When neither recipient receives anything, participants may wish to push at least one of them above an imagined "poverty line," a motivation that is reduced when both recipients receive at least some resources. Results of Experiment 1 propose that the desire to minimize the amount of people who have "nothing" drives allocators to accept inequitable allocations they would otherwise resist.

Experiment 1 further demonstrated that the effect of minimal allocation is present only when allocating gains, arguably because "losses loom larger than gains," and therefore, an additional loss is more aversive than forgoing a gain, even if some losses had already been inflicted. When allocating losses, recipients have "less than nothing," and allocators seem to try to minimize the recipients' losses regardless of the amount of losses already inflicted on them, even if by doing so they are being inequitable.

We note that we did not find an effect for a random allocation. This was somewhat surprising, because previous research (e.g., Gordon-Hecker, Rosensaft-Eshel, et al., 2017; see also Choshen-Hillel et al., 2015) suggests that randomizing between the recipients makes the inequitable allocation more acceptable, as it reduces the allocator's burden of being responsible for deciding who gets what. In the current study, however, the decision to prefer efficiency over equity was a two-stage process. Specifically, participants had to first choose the inequitable allocation and only then decide how to implement it. Therefore, participants in the human allocation condition may not have experienced the burden of responsibility in their decision to allocate but only when they were confronted with the need to choose how to implement that inequity. If true, the decision between equity and efficiency in the human allocation condition is somewhat similar to the decision in the random allocation condition. Because this is not the focal point of the paper, we do not address this issue any further.

3 | EXPERIMENT 2

In Experiment 1, we pitted equity against efficiency in order to examine what has been known in the literature as the "equity–efficiency conflict" (Gordon-Hecker, Choshen-Hillel, et al., 2017), which refers to the conflict an allocator is presumed to experience when choosing between being equitable (i.e., making sure no one receives unjustifiably more than others) and being efficient (maximizing the amount of resource being allocated). However, the fact that two principles are misaligned does not necessarily mean people experience a conflict between them. For example, although situations in which one can benefit from acting dishonestly may pose a conflict between one's moral image (Mazar, Amir, & Ariely, 2008) and her desire to maximize her benefits, Greene and Paxton (2009) proposed that honest people do not experience such conflict, because they behave honestly with no need for any self-control. In the current experiment, we examine, by tracing mouse movements, the conflict participants exhibit when having to choose between efficiency and equity. More specifically, we examine whether the conflict increases (or decreases) as a function of the decrease in the minimal allocation.

A conflict arises "because a person does not always know how to trade off costs against benefits, risk against value, and immediate satisfaction against future discomfort" (Tversky & Shafir, 1992, p. 358). For instance, when evaluating tasty but unhealthy food, people experience a conflict between the short-term satisfaction and the long-term consequences of unhealthy eating (Gillebaart, Schneider, & De Ridder, 2016; Schneider et al., 2015; Schneider, Gillebaart, & Mattes, 2019). Similarly, in interpersonal behaviors, people experience a conflict when choosing between their desire to increase their payoff and their social duty to cooperate with others (Kieslich & Hilbig, 2014) or to keep their promises (Calluso, Saulin, Baumgartner, & Knoch, 2018). Because equity is an important value for people (Adams, 1965; Fehr & Schmidt, 1999), having to pay high costs for it may put decision makers in a difficult dilemma. Hence, in Experiment 2, we examined whether a minimal allocation of zero results in higher levels of conflict because of the increased value of the resources being allocated.

To assess the level of conflict, we used mouse tracking techniques. In recent years, mouse tracking techniques have been successfully used to study cognitive conflict (Freeman & Ambady, 2010) in different decisions domains, such as food choices (Gillebaart et al., 2016; Schneider et al., 2015; Schneider & Schwarz, 2017), temporal discounting (Stillman & Ferguson, 2019), and more complex interpersonal behaviors (Calluso et al., 2018; Kieslich & Hilbig, 2014). The advantage of these techniques is that they bypass self-report, which can be prone to biases and social desirability. In the mouse tracking paradigm, two choice alternatives appear on the computer screen, and the extent to which people decisively drag their mouse toward one of the options serves as a measure of conflict. When people experience a conflict between the two options, they would typically drag their mouse toward the selected option in an arch closer to the nonselected option, compared with situations in which they experience lower conflict, in which they would drag the mouse in a straighter line (Freeman, Dale, & Farmer, 2011). The degree of curvature tracks how strongly activated both response options are and as such serves as a proxy of cognitive conflict.

There are several advantages of mouse tracking over traditional ways of inferring decision makers' inner conflict through decision times (e.g., Kleiman & Hassin, 2011). Although decision times provide essential information on how long a decision maker needed to decide, they cannot explain why this is precisely the case. Indeed, an increase in decision time can be due to many different factors. Longer decision time, for example, has been associated with more difficult decisions, decreased positive affect (Kuhl & Kazén, 1999), and decreased accessibility (Higgins, 1996; see Schneider & Schwarz, 2017, Stillman, Shen, & Ferguson, 2018 for a more elaborated discussion on the differences between mouse trajectories and decision time). The fact that decision time may track any number of processes is underlined by the fact that correlations between the conflict measured derived from mouse tracking and decision time in the literature is varied and not overly strong (e.g., Schneider et al., 2015; Stillman, Medvedev, & Ferguson, 2017). Similarly, in our data, decision times were weakly correlated with mouse tracking metrices (*r*'s = .15–.16). Therefore, we make use of mouse trajectories as a more continuous, fine-grained measure of decisional conflict.

Because the results of Experiment 1 revealed that the minimal allocation affects allocators' decisions only when allocating gains, in Experiment 2, we focused only on allocations of gains. Additionally, to examine whether tracing participants' mouse movements does indeed reflected participants' conflict between equity and efficiency, we also included trials in which such conflict did not exist, that is, trials in which the more equitable allocation was also the more efficient one.

3.1 | Method

3.1.1 | Participants

One hundred nineteen participants (78 females, M_{age} = 24.07, SD_{age} = 2.52) participated in the experiment for a show-up fee of 30 ILS (∼$7.5).

3.1.2 | Procedure

Participants arrived at the lab in groups of up to five people. Each participant was seated in front of a computer screen with a resolution of 1,920 × 1,080 pixels and was asked to complete several computerized tasks. The allocation task was part of a battery of unrelated tasks and was similar to the one used in Experiment 1, although we adjusted the technical execution to accommodate our measure of conflict (see below). Participants engaged in 18 trials of allocation decisions. In each trial, participants had to choose between an equitable allocation (where both recipients received the same amount of points) and an inequitable allocation (where one recipient received more points than the other). The two possible allocations appeared in the top two corners of the computer screen, in a form similar to that of Experiment 1. As in Experiment 1, participants were informed that their allocations had real monetary consequences and that the points allocated would later be exchanged for vouchers for coffee and pastry at the university cafeteria, valid for several months.

Each trial began with a "Go!" button presented at the bottom of the screen. Once the participant clicked the button, the button disappeared and the participant was asked to choose an allocation between two other participants, identified only by their subject numbers (a random four-digit number). The two possible allocations were presented at the top corners of the screen (see Figure 2). Participants were asked to click on the allocation they preferred. We did not encourage an early movement of the mouse cursor. Mouse settings were at their default values of Windows 7.

Within subject, we manipulated whether the decision involved a tradeoff between equity and efficiency (tradeoff vs. no tradeoff), cost of equity (1 vs. 3 vs. 5), and minimal allocation (0 vs. 2 vs. 4) of each allocation. In tradeoff trials, one allocation was equitable but inefficient (i.e., the total amount of points allocated was smaller than the other allocation), whereas the other was efficient but

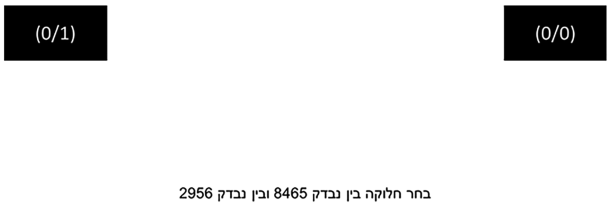

FIGURE 2 An illustration of an experimental trial in Experiment 2

inequitable. Hence, in those trials, equity and efficiency were misaligned. In the no-tradeoff trials, the more equitable allocation was also the more efficient one. As in Experiment 1, trials also differed in the cost of equity (the amount of resources lost in the inefficient allocation, or the gap between the recipients in the inequitable allocation—1 vs. 3 vs. 5) and the minimal allocation (i.e., minimal amount of points each recipient could receive—0 vs. 2 vs. 4); see Table 2 for the full design. In sum, the complete experimental design included the factors of minimal allocation (0 vs. 2 vs. 4), cost of equity (1 vs. 3 vs. 5), and tradeoff (tradeoff vs. no tradeoff), all manipulated within subjects. In half of the trials, the inequitable allocation was presented on the top right corner, and on the other half, it was presented on the top left corner. Trials were presented in a random order.

To assess participants' conflict when choosing between the different alternatives, we traced participants' mouse trajectories using MouseTracker software (Freeman & Ambady, 2010). The x and y coordinates of the computer mouse were recorded with a sample rate of 70 Hz. Assessment of the magnitude of the conflict was done based on two measures extracted from the MouseTracker software: area under curve (AUC) and maximum deviation (MD). Both measures are based on a comparison between the participants' actual trajectory from the starting point to the selected alternative and the ideal trajectory (i.e., a straight line) between those two points. AUC is the geometric area between the participants' actual trajectory and the ideal trajectory. MD is the largest deviation of the actual from the ideal trajectory. As in previous research using MouseTracker (e.g., Freeman, Ambady, Rule, & Johnson, 2008; Schneider et al., 2015), in our experiment, AUC and MD measures were highly correlated (r = .89, p < .001), and thus, we report the results only for AUC. Using MD does not change any of the reported results.

As Experiment 1, this experiment did not involve any deception of participants, and the vouchers were indeed given to the recipients based on their accumulated number of points.

3.2 | Results

To reduce the influence of outliers, we excluded trials in which the response time was greater than three SDs above the mean (>8,124 ms) in all mouse tracker analyses. Overall, we excluded 35 trials, which accounted for 1.63% of the data. Including those trials in the analysis did not change the pattern of the results.

3.2.1 | Does equity and efficiency tradeoff indeed pose a conflict?

We compared allocators' decisions in tradeoff trials with their decisions in no-tradeoff trials using a generalized linear mixed-model logistic regression with the existence of equity–efficiency tradeoff as predictor for the likelihood of choosing the efficient allocation with a random intercept for participants as a random effect and a logit link function. As expected, in the tradeoff trials, participants were less likely to choose the efficient option (58.84%, 619 of 1,052) than in the no-tradeoff trials (93.93%, 991 of 1,055), F(1, 2,105) = 516.26, p < .001. Importantly, a general linear mixed model with the existence of equity–efficiency tradeoff as predictor for AUC with a random intercept for participants revealed that in the tradeoff trials, participants displayed greater AUC (M = .68, SD = 1.29) than in the no-tradeoff trials (M = .48, SD = 1.15), F(1, 2,105) = 14.92, p < .001, thus corroborating that misalignment of equity and efficiency does indeed elicit a conflict; see Figure 3.

3.2.2 | Do allocators experience more conflict, and allocate less equitably, when both recipients may end up with nothing?

Next, we analyzed only the tradeoff trials, because those were the ones in which the equity–efficiency conflict existed. We ran a generalized linear mixed-model logistic regression with cost of equity, minimal allocation, and their interaction as predictors for the likelihood of choosing efficient inequity with a random intercept for participants and a logit link function. Replicating the results of Experiment 1, the analysis revealed a main effect for minimal allocation, F (2, 1,047) = 39.71, p < .001. Participants were more likely to choose efficient inequity when the minimal allocation was 0 (74.00%, 259 of 350) than when it was 2 (51.86%, 181 of 349; t(1,047) = 6.60,

TABLE 2 Experimental trials in Experiment 2

	Cost of equity					
	Tradeoff			No tradeoff		
Minimal allocation	1	3	5	1	3	5
0	(0,0) vs. (1,0)	(0,0) vs. (3,0)	(0,0) vs. (5,0)	(1,1) vs. (1,0)	(3,3) vs. (3,0)	(5,5) vs. (5,0)
2	(2,2) vs. (3,2)	(2,2) vs. (5,2)	(2,2) vs. (7,2)	(3,3) vs. (3,2)	(5,5) vs. (5,2)	(7,7) vs. (7,2)
4	(4,4) vs. (5,4)	(4,4) vs. (7,4)	(4,4) vs. (9,4)	(5,5) vs. (5,4)	(7,7) vs. (7,4)	(9,9) vs. (9,4)

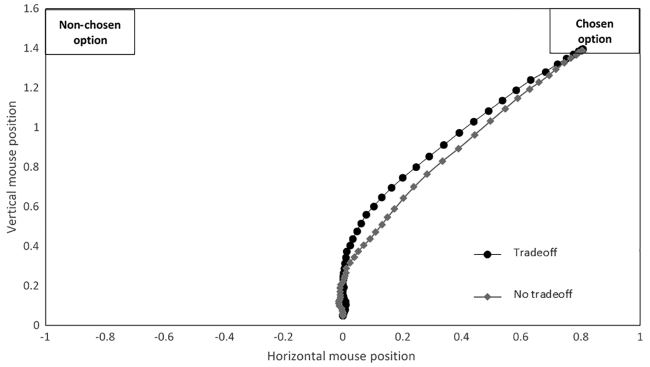

FIGURE 3 Mean mouse trajectories in Experiment 2 for tradeoff and no tradeoff conditions

p < .001, b = .36, 95% CI [.252, .465]) or 4 (50.71%, 179 of 353; t (1,047) = 7.15, p < .001, b = .39, 95% CI [.281, .493]). The effect of the cost of equity and the cost of equity × minimal allocation interaction were not significant, F's < .74, p's > .56.

To assess the magnitude of the conflict in the different experimental trials, we ran a general linear mixed model with cost of equity, minimal allocation, allocation decision, and all of their interactions predicting AUC with a random intercept for participants. We used Bonferroni correction to account for the multiple comparisons. The analysis revealed the hypothesized main effect for the minimal allocation, F(2, 1,046) = 933, p < .001. Participants displayed a greater AUC when the minimal allocation was 0 (M = .92, SD = 1.55) than when it was 2 (M = .55, SD = 1.17; t(1,046) = 3.78, p < .001, b = .35, 95% CI [.129, .574]) or 4 (M = .56, SD = 1.08; t(1,046) = 3.76, p < .001, b = .35, 95% CI [.129, .570]); see Figure 4.

The analysis further revealed a decision × minimal allocation interaction, F(2, 1,038) = 5.47, p = .004. Specifically, when the minimal allocation was 0, participants displayed greater AUC when they decided to be equitable (M = 1.20, SD = 1.88) compared with when they decided to be efficient (M = 0.82, SD = 1.41), t(1,038) = 2.27, p = .024, b = .36, 95% CI [.048, .673]. However, there was no difference in AUC between equitable and efficient allocations when the minimal allocation was 2 (M = 0.47, SD = 1.12 vs. M = 0.63, SD = 1.21; t(1,038) = −1.62, p = .105) or 4 (M = 0.48, SD = 1.00 vs. M = 0.63, SD = 1.14; t(1,038) = −1.59, p = .112). Additionally, the analysis revealed a decision × cost of equity interaction, F(2, 1,038) = 3.21, p = .041. Specifically, participants who decided to be equitable displayed greater levels of AUC when the cost of equity was 5 (M = 0.81, SD = 1.49) compared with when it was 3 (M = 0.42, SD = 0.96); t (1,038) = 2.70, p = .021, b = .39, 95% CI [.043, .733]. The AUC when the cost of equity was 1 (M = 0.65, SD = 1.38) did not statistically differ from cost of equity 3, t(1,038) = 1.48, p = .279, or 5, t (1,038) = −1.24, p = .279. Contrarily, when participants decided to be efficient, they displayed similar level of AUC when the cost of equity was either 1 (M = 0.76 SD = 1.28), 3 (M = 0.72, SD = 1.30; t < 1), or 5 (M = 0.65, SD = 1.27; t < 1). All other main effects and interactions were not significant, F's < 1.66, p's > .156.

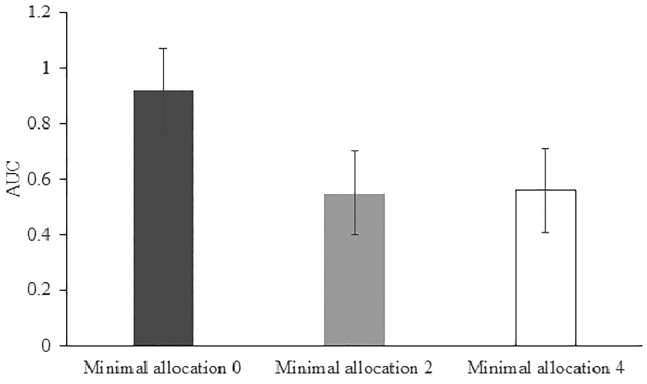

FIGURE 4 Results from Experiment 2: Conflict as assessed by the area under curve (AUC) in the different minimal allocation conditions in the tradeoff trials, aggregated across all other experimental factors. Error bars denote 95% CI (model based)

3.3 | Discussion

Experiment 2 replicated the main effect of the minimal allocation on the likelihood of discarding the resources found in Experiment 1. Furthermore, Experiment 2 revealed that allocators are not only less likely to forfeit a resource to maintain equity when doing so can increase at least one recipient's earnings from zero but are also likely to experience a greater conflict in that situation. That is, although allocators tend to prefer to be efficient to refrain from leaving both recipients with no earnings, this preference elicits a conflict, arguably because deviating from equity is psychologically challenging. Apparently, a resource that can allow someone to have more than zero is seen as more valuable and therefore more difficult to waste. Although they wish to be equitable, people also consider the negative effect preserving equity might have on the recipients, and when this effect is too aversive, such as leaving the recipients with nothing, allocators find themselves in a difficult dilemma.

In line with this interpretation, results of Experiment 2 also revealed that when both recipients may end up with nothing, a decision to be equitable is associated with greater conflict. It seems that the decision to be equitable causes greater conflict when it comes at the cost of discarding a valuable resource that can be used to allow at least one recipient to have more than nothing. Once both recipients have at least some resources, a decision to be equitable does not seem to elicit greater conflict from the decision to be efficient, which might suggest that in such situations, people can more freely express their general preferences for equity over efficiency or vice versa.

4 | EXPERIMENT 3

Experiments 1 and 2 showed that when recipients did not receive any resources, equity concerns were reduced in favor of efficiency concerns. Experiment 1 further showed that when allocating losses,

people are less affected by the minimal allocation, arguably because allocations of losses are always perceived as leaving the recipients with nothing. That is, allocators estimate the value of the wasted resource when making their allocation decisions. In allocations of gains, the resource is especially difficult to waste if it can be given to a recipient who otherwise receives nothing, whereas in allocations of losses, inflicting more losses is always seen as less favorable than deviating from equity, regardless of the minimal allocation. Experiment 2 showed that although people wish to maintain equity, the need to forgo a resource that can increase a recipient's earnings above zero is too costly and puts allocators in a difficult dilemma. Thus, the purpose of Experiment 3 was threefold: (1) replicating the behavioral results of Experiment 1, (2) replicating the mouse tracking patterns from Experiment 2, and (3) examining whether the minimal allocation affects the allocator's conflict also when allocating losses. The sample size, exclusion criteria, statistical analysis plan, and hypotheses of Experiment 3 were all preregistered and can be downloaded from http://aspredicted.org/blind.php?x=3mz266. We hypothesized that when the minimal allocation is zero, people would be more efficient than when the minimal allocation is greater than zero, but only in the gain domain, thus replicating the results of Experiment 1. We also expected to replicate the results of Experiment 2 and find that the conflict would be greater when the minimal allocation is zero. Finally, because the need to choose between two negatives produces a greater conflict than the need to choose between two positives (Dhar & Nowlis, 1999), we further hypothesized that people would experience more conflict when allocating losses compared with when allocating gains.

4.1 | Method

4.1.1 | Participants

We estimated the required sample size based on the results of Experiments 1 and 2, using G*Power 3.1. The sample size required to replicate the minimal allocation by domain interaction found in Experiment 1 was 91 participants per condition (182 overall) for an effect of f = .12, with an alpha of.05 and a power of 95%. The sample size required to replicate the effect of the minimal allocation on AUC found in Experiment 2 was 49 participants per condition (98 overall) for an effect of η^2_p = .080, with an alpha of.05 and a power of 95%. We therefore decided to recruit 220 participants (137 females, M_{age} = 24.24, SD_{age} = 2.29) who participated in the study as a part of a lab session including other questionnaires for a show-up fee of 25 ILS (∼$6.5).

4.1.2 | Procedure

Experiment 3 used a design similar to that of Experiment 2. In addition to the three within-subject factors (tradeoff, cost of equity, and minimal allocation), we manipulated between subjects the domain (gain vs. loss) in a similar way to the design we used in Experiment 1. Hence, half of the participants engaged in 18 trials in which they were asked to allocate gains, and the other half engaged in 18 trials in which they were asked to allocate losses. As in Experiments 1 and 2, participants were informed that their allocations had real monetary consequences and that the points allocated would later be exchanged for vouchers for coffee and pastry at the university cafeteria, valid for several months. The complete list of trials appears in Table 3.

During the allocation task, we tracked participants' mouse trajectories using MouseTracker software to assess the magnitude of the conflict. We computed participants' MD and AUC. As in Experiment 2, those measurements were highly correlated (r = .90, p < .001), and we report the results only for AUC. Using MD did not change the pattern of results.

As Experiments 1 and 2, this experiment did not involve any deception of participants, and the vouchers were indeed given to the recipients based on their accumulated number of points.

4.2 | Results

In our preregistered plan, we planned to exclude trials in which the response time was greater than three SDs above the mean. However, our data had several trials (12 trials, 0.3% of the data) with extremely long response times (>20,000 ms) that artificially inflated the sample's variance. To accommodate this issue, we first excluded those 12 trials and then computed the mean and standard deviation of the response time for the remaining data and excluded trials with response times greater than three SDs above the mean (>9,930 ms). Overall, we excluded 91 trials, which accounted for 2.29% of the full data. Including those trials in the analysis did not change the pattern of the results.

4.2.1 | Do equity and efficiency conflict?

We compared allocators' decisions in tradeoff trials with decisions in no-tradeoff trials using a generalized linear mixed-model logistic regression with the existence of equity–efficiency tradeoff as predictor for the likelihood of choosing the efficient allocation with a random intercept for participants and logit link function. As expected, in the tradeoff trials, participants were far less likely to choose the efficient option (62.08%, 1,197 of 1,928) than in the no-tradeoff trials (89.70%, 1,741 of 1,941), F(1,3,867) = 465.76, p < .001. Additionally, a general linear mixed model with the existence of equity–efficiency tradeoff as predictor for AUC with a random intercept for participants revealed that in the tradeoff trials, participants displayed greater AUC (M = .60, SD = 1.23) than in the no-tradeoff trials (M = .49, SD = 1.19), F(1, 3,867) = 8.51, p = .004, thus replicating the results from Experiment 2 and corroborating that in tradeoff trials, participants indeed experienced a conflict between equity and efficiency.

TABLE 3 A list of the experimental trials for Experiment 3

		Cost of equity					
		Tradeoff			No tradeoff		
	Minimal allocation	1	3	5	1	3	5
Gain	0	(0,0) vs. (1,0)	(0,0) vs. (3,0)	(0,0) vs. (5,0)	(1,1) vs. (1,0)	(3,3) vs. (3,0)	(5,5) vs. (5,0)
	2	(2,2) vs. (3,2)	(2,2) vs. (5,2)	(2,2) vs. (7,2)	(3,3) vs. (3,2)	(5,5) vs. (5,2)	(7,7) vs. (7,2)
	4	(4,4) vs. (5,4)	(4,4) vs. (7,4)	(4,4) vs. (9,4)	(5,5) vs. (5,4)	(7,7) vs. (7,4)	(9,9) vs. (9,4)
Loss	0	(−1,0) vs. (−1,−1)	(−3,0) vs. (−3,−3)	(−5,0) vs. (−5,−5)	(−1,0) vs. (0,0)	(−3,0) vs. (0,0)	(−5,0) vs. (0,0)
	2	(−3,−2) vs. (−3,−3)	(−5,−2) vs. (−5,−5)	(−7,−2) vs. (−7,−7)	(−3,−2) vs. (−2,−2)	(−5,−2) vs. (−2,−2)	(−7,−2) vs. (−2,−2)
	4	(−5,−4) vs. (−5,−5)	(−7,−4) vs. (−7,−7)	(−9,−4) vs. (−9,−9)	(−5,−4) vs. (−4,−4)	(−7,−4) vs. (−4,−4)	(−9,−4) vs. (−4,−4)

4.2.2 | Do allocators experience more conflict, and allocate losses and gains less equitably, when recipients may end up with nothing?

We analyzed only the tradeoff trials, because they were the ones in which the equity–efficiency conflict existed. We ran a generalized linear mixed-model logistic regression with domain (coded 0 = loss, 1 = gain), cost of equity, minimal allocation, and their two-way and three-way interactions as predictors for the likelihood of choosing efficient inequity with a random intercept for participants and a logit link function. Replicating the results of Experiments 1 and 2, the analysis revealed the expected main effect for the minimal allocation, F (2, 1,922) = 17.80, p < .001. Participants were more likely to choose efficient inequity when the minimal allocation was 0 (68.68%, 443 of 645) than when it was 2 (59.37%, 380 of 640; t(1,922) = 4.43, p < .001, b = .16 95% CI [.087, .224]) or 4 (58.16%, 374 of 643; t (1,922) = 5.06, p < .001, b = .18, 95% CI [.113, .256]). Additionally, and further replicating the results of Experiment 1, the analysis revealed the expected domain × minimal allocation interaction, F (2, 1,914) = 11.42, p < .001. In the loss domain, participants were similarly likely to choose efficient inequity when the minimal allocation was 0 (67.19%, 215 of 320), 2 (65.93%, 209 of 317; t < 1), or 4 (65.09%, 207 of 318; t < 1). Participants in the gain domain, however, were more likely to choose the efficient inequity when the minimal allocation was 0 (70.15%, 228 of 325) than when it was 2 (52.94%, 171 of 323; t(1,914) = 5.30, p < .001, b = .31, 95% CI [.193, .420]) or 4 (51.38%, 167 of 325; t(1,914) = 5.85, p < .001, b = .34, 95% CI [.227, .456]); see Figure 5. All other main effects and interactions were not significant (F's < 2.25, p's > .062).

To assess the magnitude of the conflict in the different experimental trials, we ran a general linear mixed model with domain (coded 0 = loss, 1 = gain), minimal allocation, cost of equity, allocation decisions, and all of their interactions predicting AUC with a random intercept for participants. The analysis did not reveal a main effect for domain, F < 1, or a main effect for the minimal allocation, F < 1, which was contrary to our hypothesis. However, the analysis did reveal a minimal allocation × domain interaction, F(2, 1,908) = 3.09, p = .046. In the loss domain, participants displayed higher levels of AUC when the minimal allocation was 4 (M = .65, SD = 1.41), compared with when it was 0 (M = .52, SD = 1.10; t(1,908) = 1.97, p = .049, b = .18, 95% CI [.000, .366]). Participant displayed similar level of AUC when the minimal allocation was 4 and 2 (M = .55, SD = 1.14; t < 1). In the gain domain, the pattern of results was similar to that of Experiment 2; participants displayed higher AUC when the minimal allocation was 0 (M = .72, SD = 1.33), compared with when it was 2 (M = .61, SD = 1.18; t < 1) and 4 (M = .53, SD = 1.16; t(1,908) = 1.43, p = .152, b = .13, 95% CI [−.049, .316]), but this effect was not significant. All other main effects and interactions were not significant (F's < 3.76, p's > .052).

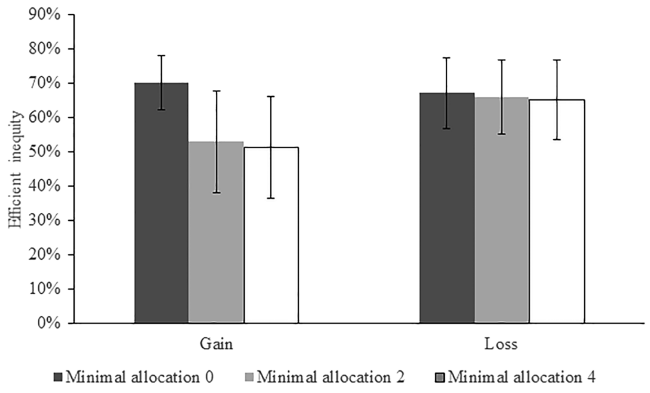

FIGURE 5 Results of Experiment 3: The likelihood of choosing efficient inequity in the different minimal allocation and domain conditions, aggregated across all other experimental factors. Error bars denote 95%CI (model based)

5 | GENERAL DISCUSSION

The current research examined how the amount of resources that each recipient can receive from the allocation affect the allocator's preference in situations in which equity and efficiency are misaligned. Our results show that when equity means that none of the recipients receive anything, allocators prefer efficient inequity in order to ensure at least one recipient receives some resources. When recipients receive some resources regardless of the allocator's decision, however, people are more willing to waste additional resources in order to maintain equity.

Complementing this finding, our experiments further revealed that the conflict between equity and efficiency arises especially when people are allocating resources among recipients with no other earnings. Although most people tend to favor efficiency when recipients have no earnings, doing so does not come easy, and people find themselves in a conflict when doing so. Although allocators wish to maintain equity, the need to forfeit a valuable resource that can be given to someone with no resources at all seems to put them in a difficult dilemma. But when at least some earnings for both recipients are secured, maintaining equity is easier and requires destroying a resource that is less valuable, because that resource can only change a recipient's endowment from "having some" to "having more." Hence, people experience less conflict and more easily discard a resource to maintain equity when allocating resources among people with greater earnings.

Finally, our findings show that when allocating losses, people put less emphasis on the amount of losses already inflicted on the recipients. That is, people are similarly likely to refrain from inflicting an unnecessary loss on a recipient in order to maintain equity, both when that recipient does not have to lose anything and when she must lose something, but can lose even more. Arguably, allocators calculate how much "losses" preserving equity will cost, and although they are willing to cause some losses to recipients who are gaining, they are more reluctant to do so to recipients who are already losing. Indeed, in the loss condition, we observed levels of inefficiency similar to those in the gain condition when the minimal allocation was zero. Maintaining efficiency in losses, however, does not always come easy. When

recipients are worst off (that is, when they had already been inflicted with a relatively large amount of losses), allocators display higher levels of conflict. It seems that just as it is difficult to leave some recipients with no earnings, it is also difficult to allocate additional losses among those who had already been inflicted with large losses.

Although we did not observe an effect for the minimal allocation on the allocations of losses, we do not necessarily propose that when allocating losses, people will always prefer efficiency, regardless of the minimal allocation. Indeed, according to prospect theory's value function (Kahneman & Tversky, 1979), losses also have a diminished marginal utility. They differ from gains; however, in the steepness of the curve—in losses—the curve is steeper than in gains, and added losses become less substantial only for higher values. On the other hand, however, people might refrain from inflicting unnecessary losses even when other losses had already been inflicted, following a "do no harm" rule (Cushman, Young, & Hauser, 2006; Ritov & Baron, 1990). Whether there is an exact value at which people switch their preference from efficiency to equity must remain a speculation at this point and can serve as an intriguing avenue for future research.

Taken together, our findings demonstrate that when asked to allocate resources, people put a great weight on the amount of resources the recipients end up with. When both recipients can end up with nothing, wasting a resource is especially aversive, and most people are willing to deviate from equity in order to refrain from losing all the potential resources. In line with previous work suggesting that having nothing is especially aversive (Schurr & Ritov, 2013; Soster et al., 2014), our findings suggest that what people focus on when allocating resources is the change the allocation would have on the recipients' state, thus emphasizing the shift from "having nothing" to "having something" as more meaningful than other changes to the recipients' earnings. People seem to focus on the loss that an equitable allocation will inflict on the recipients and are more willing to inflict losses on recipients with some secured gains in order to preserve equity than to inflict losses on recipients who have no secured gains or even some definitive losses.

Our results suggest that the equity–efficiency conflict is in some ways part of the much broader "want–should" conflict (Bitterly, Mislavsky, Dai, & Milkman, 2015). Although people *want* to be equitable, they apparently seem to feel like they *should* be efficient, especially when the resources are highly valuable, such as in the case of losses or when the minimal allocation is zero. In such cases, people comply with what they should do, but the need to forfeit their desires for equity increases their decisional conflict. Indeed, although most people say that they would be happier if their counterpart were to receive a smaller amount of money to make her payoff equal to theirs, when they can determine their counterpart's payoff, they tend to give her a larger amount, even when doing so puts them at a relative disadvantage (Choshen-Hillel & Yaniv, 2011).

To the best of our knowledge, this is the first study to empirically quantify the conflict people experience when pitting equity against efficiency. Although previous research assumed that an equity–efficiency conflict exists (e.g., Hsu, Anen, & Quartz, 2008; Okun, 1975), it was not studied directly. Here, we used mouse tracking techniques as an unobtrusive measure of such conflict, which enabled us to take the first step of examining what situational factors affect the magnitude of this conflict. We do not, however, suggest that the conflict as measured by tracking the mouse trajectories is the mechanism underlying the different allocation decisions observed in the different experimental conditions. Instead, we believe that both behavior and decisional conflict are variables of interest when studying how people weigh equity against efficiency in resource allocation decisions. Such conflicting interests in people's decision processes are not uncommon, and we believe that measuring the decisional conflict they evoke, rather than merely assuming its' existence, can provide novel insights regarding people's decision processes.

An interesting pattern that emerged in all three experiments was the lack of the effect of the amount of resources at stake (i.e., cost of equity). This pattern is in line with results from other researchers (Li, Colby, & Fernbach, 2019) and suggests that people pay little attention to the extent to which the allocation is inequitable but mostly to the change it would make to recipients' earnings. Although both the minimal allocation and the cost of equity affect the value of the allocation (either directly or indirectly), they seem to be substantially different and result in different decisions and decision processes.

Our results are in line with nonlinear utility functions, such as prospect theory's value function (Kahneman & Tversky, 1979). Such functions predict that an added resource's value is decreased when it is added to a large pool of resources compared with when it is added to a smaller pool of resources. Hence, discarding a resource is easier when the recipients have already received some other resources, because the added utility of that resource is relatively small. One might have expected allocations among recipients with zero resources to be relatively less conflictual, because discarding a highly valuable resource would be deemed inappropriate by all. However, our findings suggest that equity is a principle people struggle to maintain, and when the price of maintaining it is high, people get conflicted and have more difficulty deciding between their desire to promote equity and their felt obligation to maintain efficiency.

More broadly, the equity–efficiency conflict we study in this paper resembles the centuries-long debate between utilitarianism and deontology. Although efficiency preferences account solely for maximizing the benefits from the outcomes, as advocated by utilitarianism, a preference for equity also considers more general, deontological moral rules, such as being fair and treating everyone equally. An intriguing path for future research would be to examine whether our findings generalize to other forms of moral dilemmas. For example, one could ask whether people's willingness to sacrifice some people in order to save several others would be affected by the number of people that would have been killed in the situation regardless of the decision maker's decision. That is, would people be willing to sacrifice one person in order to save five others to the same extent they would be willing to sacrifice three people in order to save seven others? In both dilemmas, the utilitarian decision saves four lives, but the

findings of the current study suggest that decisions in those dilemmas might be substantially different. Additionally, employing process tracing techniques to study moral questions (e.g., Koop, 2013) can have great benefits both for the field of process tracing and the field of moral psychology.

The controlled experimental approach we took in this paper allowed us to specifically examine the effects of the minimal allocation on participants' decisions, as well as their conflict while making the decision. Nevertheless, such an approach comes with the cost of neglecting real-world factors such as relationships or reputation of the allocator. It had been shown, for example, that an allocator's concern with her reputation can greatly affect her allocation decision (Choshen-Hillel et al., 2015; Shaw, 2013). Examining whether and how the amount of resources that each recipient receives from the allocation affects the allocator's preference in situations, which more closely resemble real-life allocations could be a promising avenue for future research.

Overall, our findings highlight the importance of the amount of resources recipients receive on allocators' preference for equity over efficiency or vice versa. Policymakers allocating resources should be aware that although they, as well as the general public, endorse equitable resource allocations (Norton & Ariely, 2011), a shortage of resources might make equitable allocations especially difficult to accomplish. One way to overcome this hurdle would be to make such allocations that grant each person at least a small portion of the resources, which would allow for more equitable allocations in preceding decisions.

6 | CONCLUSION

When allocating resources, people often experience a conflict between equity and efficiency. Although some variance in people's decisions can be attributed to personal preferences, our results suggest that the amount of resources recipients receive, especially when the recipients might be left with no resources at all, can affect allocators' decisions, as well as their internal conflict. Thus, although people desire equity, they are willing to compromise it to ensure others will not be left with nothing.

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Additional supporting information may be found online in the Supporting Information section at the end of this article.

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