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On preferences and doing the right thing: Satisfaction with advantageous inequity when cognitive processing is limited ☆

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Abstract

We examine outcome satisfaction in situations in which people receive better outcomes than comparable other persons. Building on classical and modern social psychological theories, we argue that when reacting to these arrangements of advantageous inequity, judging the advantage is quick and easy as preferences are primary. We further propose that adjusting this appraisal requires cognitive resources as it entails integrating fairness concerns with the initial preference appraisal. Extending the literature on cognitive busyness, we therefore predict that people should be more satisfied with advantageous inequity when cognitive processing is strongly—as opposed to weakly—limited. Findings across several different experimental paradigms support our predictions. Taken together, our findings shed light on the psychological processes underlying the intriguing interplay between egoism- and fairness-based considerations when evaluating outcomes, as well as on more general preference and adjustment processes.

Keywords: Fairness; Justice; Equity; Preferences; Cognitive busyness

Numerous scientific disciplines, including philosophy, sociology, political sciences, economics, and psychology, had good reasons to focus on the issue of how people form evaluations of the outcomes they have received. A vital view in both classic and modern social psychology emphasizes the importance of drawing a distinction between two different reference points in the outcome evaluation process (e.g., Adams, 1965; Blau, 1964; Diekmann, Samuels, Ross, & Bazerman, 1997; Epley & Caruso, 2004; Epley, Keysar, Van Boven, & Gilovich, 2004; Frey, Benz, & Stutzer, 2003; Loewenstein, Thompson, & Bazerman, 1989; Messick & Sentis, 1979, 1983; Moore & Loewenstein, 2004; Smeesters, Warlop, Van Avermaet, Corneille, & Yzerbyt, 2003; Stouffer, Suchman, DeVinney, Star, & Williams, 1949; Thibaut & Kelley, 1959). One important reference point is usually referred to as people's preferences and is based on what outcome arrangements make people pleased or displeased (Messick & Sentis, 1979, 1983). Another important reference point has to do with what outcome distributions are fair or unfair, equitable or inequitable, just or unjust (Van den Bos, Wilke, Lind, & Vermunt, 1998).

Arrangements that make people pleased can be different from those that are fair, equitable, or just (e.g., Messick & Sentis, 1983). In some cases, what makes one pleased and what one believes to be right coincide perfectly. In other instances, one's reactions toward outcome distributions are characterized by a conflict

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between one's preferences and what is right. It is this conflict that we are focusing on in this paper. More specifically, we do this by examining what we think is one of the most intriguing issues in our discipline: people's satisfaction with arrangements in which their own outcomes are inequitable but better than the outcomes of comparable other persons.

Ever since Adams' (e.g., 1963a, 1963b, 1965; Adams & Jacobsen, 1964; Adams & Rosenbaum, 1962) first observations of the effects that these and other arrangements of advantageous inequity had on the reactions of employees of General Electric, social psychologists have been interested in people's reactions to advantageous inequity (see, e.g., Berkowitz & Walster, 1976). We would like to propose here that because of the mixed-motive quality of advantageous inequity arrangements (Jacques, 1961; Peters, Van den Bos, & Karremans, 2004), studying these arrangements may shed further light on the relationship between people's preferences and their inclinations of doing the right thing. To this end, we first scrutinize how people usually evaluate arrangements of advantageous inequity. After this, we specify what we think are interesting conditions that may help to better understand this evaluation process and the conflicting forces that are exerted on it.

How do people usually evaluate advantageous inequity?

Following earlier equity studies (e.g., Austin, McGinn, & Susmilch, 1980; Van den Bos, Lind, Vermunt, & Wilke, 1997; Van den Bos et al., 1998), we study people's evaluations of advantageous inequity by exposing participants to situations in which there is another person who is comparable to the participants themselves with respect to the amount of input they have provided. The outcome that participants themselves receive is held constant across conditions and, to arrange for equitable and inequitable arrangements, we vary the outcome that the other person in the situation receives: Participants who are confronted with advantageous inequity are informed that their own outcome is better than the outcome of the other person. Participants who are faced with disadvantageous inequity are told that their outcome is worse than the other person's outcome. Participants who find themselves in an equitable situation are informed that their outcome is equal to the other person's outcome.

Different types of human reactions have been investigated in equity studies. The two dependent variables that have been most frequently used measure how satisfied people are with equitable and inequitable arrangements and how just people judge these arrangements to be (e.g., Adams, 1965; Austin et al., 1980; Van den Bos et al., 1997, 1998). Although the concepts of justice and satisfaction are interrelated, they are different concepts, and it is important not to confuse them (Austin et al., 1980; Blau, 1964; Messick & Sentis, 1983; Van den Bos et al., 1997, 1998). Most important for the current purposes is the finding that the conflict between preferences and doing the right thing can be most clearly seen when people's *satisfaction* with advantageous inequity is studied.

That is, previous studies have shown that, with respect to people's judgments of outcome *justice*, a person who receives an outcome that is equal to the outcome of another person (who has provided a comparable amount of inputs) receives an equitable outcome and hence receives a just outcome, whereas a person who receives a better outcome than the comparison other and a person who receives a worse outcome than the comparison other both receive inequitable outcomes and hence both receive unjust outcomes. As a result, previous equity studies have found that a person who receives an outcome that is equal to the outcome of the comparison other will perceive his or her outcome to be more just than either a person who receives a better outcome than the comparison other or a person who receives a worse outcome than the comparison other, and that outcome justice judgments in the better than other conditions will not differ from the outcome justice judgments in the worse than other conditions (see, e.g., Austin et al., 1980; Van den Bos et al., 1997, 1998).

More interesting for the current purposes is people's *satisfaction* with arrangements of advantageous inequity. On the basis of equity theory (e.g., Adams, 1965; Austin et al., 1980; Austin & Walster, 1974; Buunk & Van Yperen, 1989; Van den Bos et al., 1997, 1998), it can be reasoned that individuals who are faced with inequity will feel distressed and will be less satisfied about this arrangement than individuals who are faced with equity. As noted by Adams (1965): "There can be little doubt that inequity results in dissatisfaction" (p. 283). Furthermore, it can be argued that people who are confronted with disadvantageous inequity do not have to deal with conflicting social motives when forming judgments of outcome satisfaction whereas people who are faced with advantageous inequity do. That is, when people are made angry by disadvantageous inequity there are two sources of negative affect: (a) the unfairness, and (b) the relative deprivation of lacking what the other person has received (cf. Van den Bos et al., 1997, 1998). However, when experiencing advantageous inequity, there is one source of positive affect and one source of negative affect: (a) the positive source is the egoism-based pleasure of receiving a relatively good outcome, whereas (b) the negative source is the fairness-based feeling of being unfairly advantaged (cf. Van den Bos et al., 1997, 1998). When confronted with equitable arrangements there are mainly sources of positive affect (caused by the experiences of fairness and equity) and no or weak sources of negative affect (Adams, 1965; Buunk & Van Yperen, 1989).

At least three implications follow from the above analysis of people's satisfaction with advantageous inequity. The first implication underlies the prediction that typically is made in equity studies (e.g., Buunk & Van Yperen, 1989; Van den Bos et al., 1997, 1998): that two sources of negative experience are bound to sum to less satisfaction than are one source of a positive emotional experience and one source of a negative emotional experience. Therefore, persons who are confronted with advantageous inequity should feel uncomfortable but will be more satisfied than persons who are confronted with disadvantageous inequity (Peters et al., 2004). Thus, in equity studies it is usually proposed and found that a person who receives an equitable outcome will be more satisfied than a person who receives an advantageous inequitable outcome, and that the latter individual will be more satisfied than a person who receives a disadvantageous inequitable outcome (e.g., Buunk & Van Yperen, 1989; Van den Bos et al., 1997, 1998).

The second implication is that the above-described analysis suggests that the conflict between preferences and doing the right thing is likely to be most evident when inspecting people's satisfaction with advantageous inequity. That is, whereas people judge equitable arrangements to be just and satisfying and disadvantageous inequitable arrangements to be unjust and dissatisfying, they typically judge advantageous inequity to be as unjust as disadvantageous inequity but tend to be more satisfied with advantageous inequity than with disadvantageous inequity. It follows then that when people are asked to judge the *justice* of arrangements of advantageous inequity, their justice judgments tend to be influenced predominantly by the unfairness aspects of these arrangements. In contrast, when people are evaluating how *satisfied* they are with these arrangements, both preferences and fairness considerations are influencing their satisfaction evaluations. This suggests that when people are reacting to advantageous inequity, satisfaction evaluations are likely to be more easily influenced than justice judgments by the two conflicting forces in which we are interested in the present research. Given then that satisfaction ratings may be particularly well suited to study the conflict between egoism-based preferences and fairness considerations, satisfaction with advantageous inequity will constitute our primary dependent variable in all of the current experiments. Additionally, we will explore the distinction between justice judgments and satisfaction evaluations in the studies that follow after Experiment 2, and we will come back to this issue in the General discussion.

The third implication is that we argue here that the above-described analysis of how people evaluate how satisfied they are with advantageous inequity is important because it can be related to theories that suggest that people usually will know whether their outcome gives them pleasure before they have insight into the fairness aspects of the outcome distribution (see, e.g., Epley & Caruso, 2004; Epley et al., 2004; Messick & Sentis, 1979, 1983; Moore & Loewenstein, 2004). Messick and Sentis, for instance, argue convincingly that the relationship between preference and fairness is such that people generally have more immediate access to or knowledge of their preferences in a situation than to what is fair. As stated by Messick and Sentis (1983): "one usually knows one's preferences before one knows what is fair" (p. 88). This view led the authors to propose that preference is primary (cf. Zajonc, 1980) and that people assess whether and how fairness is relevant in a later phase (possibly almost immediately). Related to this, Moore and Loewenstein (2004) argue that self-interest is automatic, viscerally compelling, and typically unconscious whereas, in contrast, paying attention to fairness concerns is usually a more thoughtful process. Similarly, Epley and Caruso (2004; Epley et al., 2004) propose that people automatically interpret objects and events egocentrically and only subsequently correct or adjust that interpretation when necessary. According to Epley et al. (2004), the automatic default occurs rapidly but correction requires time and attentional resources.

The theories noted above are primarily general conceptual statements, have not focused on people's satisfaction with advantageous inequity, and have not provided empirical data on this issue (for details, see Epley & Caruso, 2004; Epley et al., 2004; Messick & Sentis, 1979, 1983; Moore & Loewenstein, 2004), but combining the processes these models are stipulating with our examination of the social psychology of advantageous inequity lead us to argue that when people are evaluating how satisfied they are with an arrangement of advantageous inequity they will infer that the outcome distribution gives them egoism-based pleasure before they realize that the arrangement is unfair (cf. Messick & Sentis, 1979, 1983). What we propose to do here is to explore the implications of this proposition by investigating people's evaluations of outcome satisfaction when reacting to arrangements of advantageous inequity while their cognitive processing has been strongly limited (versus weakly limited). To this end, we will integrate our analysis of the social psychology of advantageous inequity with the research on the effects of cognitive busyness on person evaluations and will note some interesting parallels between these two lines of thought.

Satisfaction with advantageous inequity and cognitive busyness

Gilbert and others have argued convincingly that when people form evaluations of having seen another person performing a certain behavior they typically draw initial character inferences from the behavior and then correct these initial evaluations by taking into

account the influences of external forces that may have influenced the person's behavior (e.g., Gilbert & Osborne, 1989; Gilbert, Pelham, & Krull, 1988; Ham & Vonk, 2003). These authors have further put forward that correction requires more cognitive resources than does the forming of initial inferences. As a result, forming person evaluations while simultaneously performing a resource-consuming task should impair the former process more than the latter process. Gilbert et al.'s experiments indeed show that person evaluations are less influenced by external information under conditions of high cognitive busyness than under conditions of low cognitive busyness (e.g., Gilbert & Osborne, 1989; Gilbert et al., 1988).[1]

In both our analysis of the process by which people evaluate how satisfied they are with advantageous inequity (see also Epley & Caruso, 2004; Epley et al., 2004; Messick & Sentis, 1979, 1983; Moore & Loewenstein, 2004) and Gilbert et al.'s (1988; Gilbert & Osborne, 1989) work, some correction is postulated to take place in the evaluation processes under investigation. Furthermore, Gilbert et al. showed persuasively that the implications of this correction process can be investigated by exploring people's evaluations under conditions of high versus low cognitive busyness. Integrating our analysis of the social psychology of advantageous inequity with Gilbert et al.'s (1988; Gilbert & Osborne, 1989) work leads to the following hypothesis regarding people's satisfaction with advantageous inequity: When people react to arrangements of advantageous inequity their evaluations of outcome satisfaction should be more positive under conditions where their cognitive processing is strongly (as opposed to weakly) limited.

We investigated this hypothesis in a number of different experiments using different paradigms and different manipulations. Common elements in our experiments were that we varied that participants' cognitive processing was either strongly or weakly limited while responding to the stimulus materials (see, e.g., Gilbert & Osborne, 1989; Gilbert et al., 1988; see also Wegner & Erber, 1992). Furthermore, in all experiments, advantageous inequity conditions were included in which participants received an outcome that was better than the outcome of a comparable other person and the main dependent variable was participants' outcome satisfaction evaluations.

In Experiments 1–3, we also included conditions of disadvantageous inequity, in which participants' own outcomes were worse than the comparable other person, and equitable conditions, in which own outcomes were equal to the other person's outcome. We incorporated these conditions because they are often—although not always (see, e.g., Rivera & Tedeschi, 1976)—included in equity studies and because we wanted to explore whether effects of the cognitive busyness manipulations would be found in these conditions as well.

Experiment 1

In Experiment 1, participants responded to outcome distributions that were constructed following earlier research by Van den Bos (1999, Experiment 1). The outcome that participants received was held constant across conditions, and we varied whether the outcome was equal to the outcome of a comparable other person (equal-to-other condition), better than the outcome of the other person (better-than-other condition), or worse than the other person's outcome (worse-than-other condition). Building on the work by Gilbert and others (e.g., Gilbert et al., 1988), half of the participants rehearsed a string of eight symbols while reading and responding to the stimulus materials (high-busyness condition) whereas the other half of the participants rehearsed 1 symbol (low-busyness condition). Following previous equity studies (e.g., Van den Bos et al., 1997, 1998), the dependent variable was participants' judgments of outcome satisfaction.

Method

Participants and design

One hundred and thirty-eight students (49 men and 89 women)[2] at the Free University Amsterdam participated in the experiment and were paid for their participation. Participants were randomly assigned to one of the conditions of the 2 (cognitive busyness: low vs. high) × 3 (outcome: equal to other vs. better than other vs. worse than other) factorial design.

Experimental procedure

Participants completed the experiment before and after participating in other, unrelated experiments. The experiments lasted a total of 1.5 h, and participants were paid 15 Dutch guilders for their participation (1 Dutch guilder equaled approximately $0.40 U.S. at the time the experiment was conducted). On arrival at the laboratory, participants were led to separate cubicles, each of which contained a computer with a monitor and a keyboard. The computers were used to present the stimulus information and to measure the dependent variables. In all

[1] Because our research hypotheses and research designs were inspired by the work by Gilbert and his colleagues (e.g., Gilbert & Osborne, 1989; Gilbert et al., 1988), we will adopt their convention and use the term "cognitive busyness" in the present paper, rather than "cognitive load."

[2] In all experiments presented here, gender was proportionally distributed among conditions. Gender had no main or interaction effects on the dependent variables of the experiments reported here and hence was dropped from the analyses that are presented in this paper.

experiments of this paper, participants' responses were anonymous and participants knew this.

In the first part of the experiment, we manipulated cognitive busyness. Building on the work by Gilbert et al. (1988), participants in the high-busyness condition were asked to rehearse a string of eight symbols: @ * % # ? $ ± §. Participants in the low-busyness condition were asked to rehearse one symbol: @. In both conditions, participants were given 25 s to rehearse the symbols and they were asked to hold the symbols in memory until the computer would later ask them to reproduce them (cf. Gilbert et al., 1988).

After this, participants were asked to imagine the following situation (cf. Van den Bos, 1999):

Last summer you had a job together with a fellow student. The two of you worked together in a pair. There were a large number of such pairs in the organization where you worked. You and your fellow student have worked equally hard and performed equally well. Because the organization has performed well last summer, it is announced on the last day of summer that a bonus of 10,000 Dutch guilders will be distributed among all employees. A certain amount of money has been allocated to you and your fellow student. It has to be decided how this amount of money will be distributed between you and your fellow student.

This was followed by the manipulation of outcome. Participants read the following sentences (manipulated information in italics):

A week after this employees are paid. You receive a bonus of 500 Dutch guilders. Your fellow student receives a bonus of *250*/*500*/*750* Dutch guilders.

After this, participants were asked questions pertaining to the dependent variable: Participants were asked how satisfied they were with the bonus they received (1 = *very dissatisfied*, 7 = *very satisfied*) and how happy they were with the bonus they received (1 = *very unhappy*, 7 = *very happy*). Because participants' answers to these two items were highly correlated ($r = .86$, $p < .001$), we averaged their answers to form a reliable scale of perceived outcome satisfaction ($\alpha = .93$). After completing these measures, participants were asked to write down the symbols they were supposed to rehearse. When the participants had done this, and had completed the other experiments in which they would participate, they were thoroughly debriefed and paid for their participation.

Results

Recalled symbols

As expected, the large majority of the participants were able to accurately recall the symbols they were supposed to rehearse: Ninety-nine percent of the participants in the low-busyness condition accurately recalled the symbol they had to rehearse. Ninety-six percent of the participants in the high-busyness condition recalled at least six symbols accurately (19% of those accurately recalled six symbols, 48% accurately recalled seven symbols, and 33% accurately recalled eight symbols); the number of recalled symbols in this condition did not differ as a function of the outcome manipulation, $F(2,67) = 1.27$, n.s. These results indicate that participants took the memorization task seriously and made an effort to recall the symbols while completing the experiment.

Outcome satisfaction

A 2×3 analysis of variance (ANOVA) on the outcome satisfaction scale showed main effects of outcome, $F(2,132) = 236.56$, $p < .001$, and cognitive busyness, $F(1,132) = 4.36$, $p < .04$; these effects were qualified by the predicted interaction, $F(2,132) = 3.38$, $p < .04$. To interpret these effects we performed a least significant difference test for multiple comparisons between means ($p < .05$), with the six cells of our design serving as the independent variable (Kirk, 1982). Table 1 shows the result of this test as well as the means and standard deviations of the outcome satisfaction scale. As hypothesized, results showed that within the better-than-other condition, participants were more satisfied with their outcome in the high-busyness condition than in the low-busyness condition. There were no effects of cognitive busyness within the equal-to-other and worse-than-other conditions.

Additionally, it can be noted here that, within both high- and low-busyness conditions, perceived outcome satisfaction was higher in the equal-to-other conditions than in the better-than-other conditions and was higher in the better-than-other conditions than in the worse-than-other conditions (see Table 1). This pattern of means is in accordance with previous equity findings (e.g., Buunk & Van Yperen, 1989; Van den Bos et al., 1997, 1998). It should be noted, however, that as predicted the mean satisfaction rating within the better-than-other condition was closer to the equal-to-other

Table 1
Means and standard deviations of outcome satisfaction as a function of cognitive busyness and outcome (Experiment 1)

Cognitive busyness	Outcome					
	Equal to other		Better than other		Worse than other	
	M	*SD*	*M*	*SD*	*M*	*SD*
Low	6.5_a	0.6	3.0_c	1.2	1.6_d	0.6
High	6.3_a	0.5	4.0_b	1.7	2.0_d	1.1

Note. Means are on 7-point scales, with higher values indicating higher levels of outcome satisfaction. Means with no subscripts in common differ significantly ($p < .05$), as indicated by a least significant difference test for multiple comparisons between means (Kirk, 1982).

condition under conditions of high cognitive busyness than under conditions of low cognitive busyness.

Discussion

The reported findings are supportive of our line of reasoning presented earlier: As predicted, findings show that when people are reacting to arrangements of advantageous inequity their judgments of outcome satisfaction are more positive under conditions of high cognitive busyness than under conditions of low cognitive busyness. Before strong conclusions are drawn on the basis of these findings, however, it is important to replicate them in a second experiment.

Experiment 2

In Experiment 2, we used an arrangement of advantageous inequity that was constructed following Van den Bos et al. (1998, Experiment 1). As in Experiment 1 of the current paper, the outcome that participants received in Experiment 2 was held constant, and we manipulated whether this outcome was equal to the outcome of a comparable other person (equal-to-other condition), better than the outcome of the other person (better-than-other condition), or worse than the other person's outcome (worse-than-other condition). To get an indication of the robustness of the effects reported here, we used a different manipulation to vary limited cognitive processing among our participants: Building on the work by Wegner and Erber (1992, Experiment 1), half of the participants were asked to respond to the questions following the scenarios as quickly as possible (high time pressure condition) whereas the other half of the participants were not asked this (low time pressure condition). The dependent variable was participants' judgments of outcome satisfaction.

Method

Participants and design

One hundred and fifty-four students (60 men and 94 women) at the Free University Amsterdam participated in the experiment and were paid for their participation. Participants were randomly assigned to one of the conditions of the 2 (time pressure: low vs. high) × 3 (outcome: equal to other vs. better than other vs. worse than other) factorial design.

Experimental procedure

Participants completed the experiment before and after participating in other, unrelated experiments. The experiments lasted a total of 40 min, and participants were paid 15 Dutch guilders for their participation. On arrival at the laboratory, participants were led to separate cubicles, each of which contained a computer with a monitor and a keyboard. The computers were used to present the stimulus information and to measure the dependent variables.

At the start of the experiment, all participants were informed that in this study they would be asked to read about a situation and answer questions about this situation. Participants in the high time pressure condition were asked to respond to the questions as quickly as possible whereas participants in the low time pressure condition were not asked this.

After this, participants were asked to imagine the following situation (cf. Van den Bos et al., 1998):

In the near future, you are going to live in a new rented house. The rent of this house has yet to be determined. To decide on the rent, each individual tenant has to appear before a rent tribunal. The rent tribunal will decide on the monthly rent that you will have to pay. To determine this rent, your neighbor, who will rent a comparable house, also has to appear before the rent tribunal.

This was followed by the outcome manipulation. Participants read the following sentences (manipulated information in italics):

A week after this you are informed that the rent that you will have to pay is 750 Dutch guilders. Your neighbor's rent also has been determined: The rent he will have to pay is *500*/*750*/*1000* Dutch guilders.

After this, participants were asked questions pertaining to the dependent variable: Participants were asked how satisfied they were with the rent they had to pay (1 = *very dissatisfied*, 7 = *very satisfied*) and how happy they were with the rent they had to pay (1 = *very unhappy*, 7 = *very happy*). The answers to these two questions were highly correlated ($r = .76$, $p < .001$) and were averaged to form a reliable scale of perceived outcome satisfaction ($\alpha = .92$). When participants had answered these questions, and had completed the other experiments in which they would participate, they were thoroughly debriefed and paid for their participation.

Results

Response latencies

Participants in the high time pressure condition of Experiment 2 were asked to respond to the outcome satisfaction items as quickly as possible whereas participants in the low time pressure condition were not asked this. The time participants needed to answer the two outcome satisfaction items of Experiment 2 was measured by the computers. As expected, a 2 × 3 multivariate analysis of variance (MANOVA) on the response latencies yielded only main effects of time pressure: multivariate $F(2,147) = 7.39$, $p < .01$; for outcome satisfaction,

$F(1,148) = 4.66$, $p < .04$; for outcome happiness, $F(1,148) = 14.02$, $p < .001$. In accordance with instructions, participants in the high time pressure condition took less time to answer both the outcome satisfaction question ($M = 2.1$ s, $SD = 1.8$) and the outcome happiness question ($M = 3.1$ s, $SD = 2.0$) than participants in the low time pressure condition (Ms = 2.9 and 4.9 s, SDs = 2.6 and 3.7, respectively). This shows that, as intended, participants in the high time pressure conditions answered the outcome satisfaction items more quickly than did participants in the low time pressure conditions.

Outcome satisfaction

A 2 × 3 ANOVA on the outcome satisfaction scale yielded a main effect of outcome, $F(2,148) = 55.52$, $p < .001$; an effect that was qualified by the predicted interaction, $F(2,148) = 5.10$, $p < .01$. The main effect of the time pressure manipulation was not significant, $F < 1$. To interpret these effects we performed a least significant difference test for multiple comparisons between means ($p < .05$), with the six cells of our design serving as the independent variable (Kirk, 1982). Table 2 shows the result of this test and the means and standard deviations of the outcome satisfaction scale. As hypothesized, findings showed that, within the better-than-other condition, participants were more satisfied with their outcome in the high time pressure condition than in the low time pressure condition. There were no effects of the time pressure manipulation within the equal-to-other and worse-than-other conditions.

It can further be noted that within the low time pressure condition, perceived outcome satisfaction was higher in the equal-to-other condition than in the better-than-other condition and was higher in the better-than-other condition than in the worse-than-other condition (see Table 2). This pattern of means is in accordance with previous equity findings (e.g., Buunk & Van Yperen, 1989; Van den Bos et al., 1997, 1998). In the high time pressure condition, participants in the better-than-other condition were also more strongly satisfied with their outcome than those in the worse-than-other condition, but they were as satisfied as those in the equal-to-other condition.

Table 2
Means and standard deviations of outcome satisfaction as a function of cognitive busyness and outcome (Experiment 2)

Time pressure	Outcome					
	Equal to other		Better than other		Worse than other	
	M	*SD*	*M*	*SD*	*M*	*SD*
Low	4.7_{a}	1.4	3.8_{b}	1.4	2.0_{c}	0.8
High	$4.1_{a,b}$	1.5	4.7_{a}	2.0	1.5_{c}	0.8

Note. Means are on 7-point scales, with higher values indicating higher levels of outcome satisfaction. Means with no subscripts in common differ significantly ($p < .05$), as indicated by a least significant difference test for multiple comparisons between means (Kirk, 1982).

Discussion

The findings of Experiment 2 replicate the results of Experiment 1 and provide supportive evidence for our line of reasoning: As hypothesized, findings reveal that in situations of advantageous inequity, people's evaluations of outcome satisfaction are more positive under conditions of high time pressure than under conditions of low time pressure. Furthermore, these results have been found using different stimulus materials and a different manipulation of limited cognitive processing than in Experiment 1. This helps to establish the robustness of the findings reported here.

In addition, whereas in Experiment 1 participants faced a net gain that was, depending on conditions, equal, better, or worse than their partner's, in Experiment 2 we varied that participants had to pay an equal amount of money as their partner's or had to pay either more or less money than their partner's. In other words, whereas in Experiment 1 participants faced a gain perspective, in Experiment 2 they were confronted with a loss frame. Based on the literature on gain and loss frames (see, e.g., De Dreu, Lualhati, & McCusker, 1994) one could well argue that this is important because testing our hypothesis in loss domains represents a strong test of the line of reasoning we put forward in this paper. Obtaining evidence for our hypothesis using both gain-frame (Experiment 1) and loss-frame (Experiment 2) materials further contributes to the generalizability of our analysis of the social psychology of advantageous inequity.

It should be noted, however, that in both Experiments 1 and 2 participants read and responded to hypothetical situations. One might wonder whether similar results would be obtained when participants were exposed to a situation in which they directly experienced a distribution of outcomes. As a third test of our predictions, therefore, we manipulated the cognitive processing of participants in an experiment in which outcome distributions were directly experienced by them.

Experiment 3

Experiment 3 was constructed following the experimental paradigm developed by Van den Bos et al. (1997, Experiment 2). In this experimental situation, participants completed tasks together with another participant and learned that their own task performance was comparable to the other participant's task performance. As in Experiments 1 and 2, the outcome that participants received was held constant and we varied whether this outcome was equal to the outcome of the other participant, better than the outcome of the other participant, or worse than the other participant's outcome. The cognitive busyness manipulation was the same as in

Experiment 1: Half of the participants rehearsed a string of eight symbols while responding to the distribution of outcomes and half of the participants rehearsed one symbol. The dependent variable was again participants' judgments of outcome satisfaction, but, to improve the reliability of participants' satisfaction with equitable and inequitable arrangements, we included two additional questions (asking participants how satisfied and happy they were with the distribution of outcomes), yielding a reliable four-item scale of participants' evaluations of outcome satisfaction. Additionally, a similar scale of participants' outcome justice judgments was included in the experiment to check whether our outcome manipulation would yield the justice judgments effects commonly found in equity studies (see, e.g., Austin et al., 1980; Van den Bos et al., 1997, 1998).

Method

Participants and design

One hundred and sixty-eight students (68 men and 100 women) at the Free University Amsterdam participated in the experiment and were paid for their participation. Participants were randomly assigned to one of the conditions of the 2 (cognitive busyness: low vs. high) × 3 (outcome: equal to other vs. better than other vs. worse than other) factorial design.

Experimental procedure

Participants completed the experiment before participating in other, unrelated experiments. The experiments lasted a total of 45 min, and participants were paid 10 Dutch guilders for their participation. Participants were invited to participate in a study on how people perform tasks. On arrival at the laboratory, participants were led to separate cubicles, each of which contained a computer with a monitor and a keyboard. The computers were used to present the stimulus information and to measure the manipulation checks and the dependent variables.

In the first part of the instructions, participants were informed that they would be participating in the experiment with another person, referred to as "Other." The experimental procedure was then outlined to the participants: After the experimental tasks were explained, participants would work on the tasks for 10 min. Furthermore, participants were informed that they and Other would get a certain amount of money at the end of the experiment if they both had performed well on the tasks. The amount of money would be divided as bonuses among the participant and Other. What exact amount of money would be allocated to the participants would become known at the end of the experiment. After participants had completed the 10-min work round, the experimenter would divide bonuses between the participants and Other. Three practice questions were posed to ensure comprehension of the course of events. If participants gave a wrong answer to a question, the correct answer was disclosed, and main characteristics of the course of events were repeated.

Then the tasks were explained to the participants: Participants were asked to answer questions that measured general knowledge for 10 min. They were told that both they and Other had to answer the same questions. After the work round had ended, participants were told how many questions they had answered correctly, and it was communicated to the participants that Other had answered an equivalent amount of questions correctly (cf. Van den Bos et al., 1997). To assess whether participants thought of Other as a person who was comparable in the amounts of inputs he or she provided (cf. Van den Bos, 1999; Van den Bos et al., 1997), they were asked to what extent Other had performed well when answering the general knowledge questions relative to the performance of the participant self (1 = *much worse*, 4 = *equally*, 7 = *much better*), to what extent Other did his/her best when answering the knowledge questions relative to the participant self (1 = *much less*, 4 = *equally*, 7 = *much more*), and to what extent Other was good in performing the knowledge questions relative to the participant self (1 = *much worse*, 4 = *equally*, 7 = *much better*).

After this, cognitive busyness was manipulated in the same way as in Experiment 1: Participants in the high-busyness condition were asked to remember a string of eight symbols and those in the low-busyness condition were asked to remember one symbol.

Participants were then told that the experimenter would divide bonuses between them and Other. It was communicated to the participants that they received three bonuses. This was followed by the manipulation of outcome of Other. In the better-than-other condition, participants were informed that Other received one bonus. In the equal-to-other condition, participants were informed that Other received three bonuses. In the worse-than-other condition, participants were informed that Other received five bonuses.

Participants were then asked questions pertaining to the dependent variable and manipulation checks. The primary dependent variable was assessed by asking participants how satisfied they were with their three bonuses (1 = *very dissatisfied*, 7 = *very satisfied*), how happy they were with their three bonuses (1 = *very unhappy*, 7 = *very happy*), how satisfied they were with the division of bonuses (1 = *very dissatisfied*, 7 = *very satisfied*), and how happy they were with the division of bonuses (1 = *very unhappy*, 7 = *very happy*). These items were highly correlated ($rs > .51$, $ps < .001$) and were averaged to form a reliable scale of perceived outcome satisfaction ($\alpha = .86$).

As a check on the manipulation of the three outcome conditions, participants were asked two questions for each condition. Specifically, to check the manipulation of the better-than-other condition, participants were asked to what extent they agreed with the statement that

they received more bonuses than the other participant (1 = *strongly disagree*, 7 = *strongly agree*) and to what extent they agreed with the statement that the other participant received less bonuses than they received (1 = *strongly disagree*, 7 = *strongly agree*). Answers to these two items were strongly correlated ($r = .95$, $p < .001$) and were averaged to form a reliable check of the better-than-other condition ($\alpha = .97$). To check the manipulation of the equal-to-other condition, participants were asked to what extent they agreed with the statement that they received an equal number of bonuses as the other participant (1 = *strongly disagree*, 7 = *strongly agree*) and to what extent they agreed with the statement that the other participant received an equal number of bonuses as they received (1 = *strongly disagree*, 7 = *strongly agree*). Answers to these two items were strongly correlated ($r = .94$, $p < .001$) and averaged to form a reliable check of the equal-to-other condition ($\alpha = .97$). Finally, to check the manipulation of the worse-than-other condition, participants were asked to what extent they agreed with the statement that they received less bonuses than the other participant (1 = *strongly disagree*, 7 = *strongly agree*) and to what extent they agreed with the statement that the other participant received more bonuses than they received (1 = *strongly disagree*, 7 = *strongly agree*). Answers to these two items were strongly correlated ($r = .90$, $p < .001$) and averaged to form a reliable check of the worse-than-other condition ($\alpha = .95$).

To further check the manipulation of outcome, participants' outcome justice judgments were solicited by asking participants how just they considered the three bonuses they received (1 = *very unjust*, 7 = *very just*), how fair they considered the three bonuses they received (1 = *very unfair*, 7 = *very fair*), how just they judged the division of the bonuses (1 = *very unjust*, 7 = *very just*), and how fair they judged the division of the bonuses (1 = *very unfair*, 7 = *very fair*). These four items were highly correlated ($rs > .67$, $ps < .001$) and were averaged to form a reliable scale of outcome justice judgments ($\alpha = .91$).

As check on the manipulation of cognitive busyness, participants were asked to what extent they agreed with statements that during the study they were busy trying to remember the symbols (1 = *strongly disagree*, 6 = *strongly agree*), that it was difficult to remember the symbols (1 = *strongly disagree*, 6 = *strongly agree*), that their thoughts were kept busy remembering the symbols (1 = *strongly disagree*, 6 = *strongly agree*), and that it took much effort to remember the symbols (1 = *strongly disagree*, 6 = *strongly agree*). These items were highly correlated ($rs > .47$, $ps < .001$) and were averaged to form a reliable scale of cognitive busyness ($\alpha = .87$). After completing these measures, participants were asked to write down the symbols they were supposed to rehearse. When the participants had done this, and had completed the other experiments in which they would participate, they were thoroughly debriefed and paid for their participation.

Results

Relative outcomes

A 2 × 3 MANOVA on the three manipulation checks of outcome yielded only a main effect of outcome at both the multivariate level and the univariate levels, multivariate $F(6,320) = 585.77$, $p < .001$; for the better-than-other check, $F(2,162) = 826.38$, $p < .001$; for the equal-to-other check, $F(2,162) = 589.09$, $p < .001$; for the worse-than-other check, $F(2,162) = 943.93$, $p < .001$. To interpret these effects, we performed a least significant difference test for multiple comparisons between means ($p < .05$) for each manipulation check, with the three conditions of the outcome manipulation serving as the independent variable (Kirk, 1982). This showed that participants in the better-than-other condition agreed more with the statements that they received an outcome that was better than the other participant's outcome ($M = 6.6$, $SD = 1.2$) than participants in the equal-to-other ($M = 1.2$, $SD = 0.5$) and worse-than-other conditions ($M = 1.2$, $SD = 0.6$) and that no other differences between conditions were significant. Participants in the equal-to-other condition agreed more with the statements that their outcome was equal to the outcome of the other participant ($M = 6.8$, $SD = 0.7$) than participants in the better-than-other ($M = 1.3$, $SD = 1.1$) and worse-than-other conditions ($M = 1.3$, $SD = 1.0$); no other differences between conditions were significant. Participants in the worse-than-other condition agreed more with the statements that their outcome was worse than the other participant's outcome ($M = 6.7$, $SD = 1.0$) than participants in the equal-to-other ($M = 1.2$, $SD = 0.7$) and better-than-other conditions ($M = 1.2$, $SD = 0.5$); no other differences between conditions were significant. These findings suggest that outcome was successfully operationalized.

Justice judgments

Participants' outcome justice judgments yielded only a main effect of outcome, $F(2,162) = 99.57$, $p < .001$. The main effect of cognitive busyness, $F(1,162) = 0.04$, $p > .83$, and the interaction effect between cognitive busyness and outcome, $F(2,162) = 0.28$, $p > .75$, were both nonsignificant. Table 3 shows the means and standard deviations of the outcome justice scale and the results of a least significant difference test for multiple comparisons between means ($p < .05$), with the six cells of our design serving as the independent variable (Kirk, 1982). As expected, participants in the equal-to-other condition judged their outcome to be more just ($M = 5.7$, $SD = 0.8$) than those in the better-than-other ($M = 3.2$, $SD = 1.1$) and worse-than-other conditions ($M = 3.1$, $SD = 1.3$) and no other differences between conditions were significant.

Table 3
Means and standard deviations of outcome justice judgments as a function of cognitive busyness and outcome (Experiment 3)

Cognitive busyness	Outcome					
	Equal to other		Better than other		Worse than other	
	M	*SD*	*M*	*SD*	*M*	*SD*
Low	5.6_a	0.9	3.3_b	1.3	3.0_b	1.1
High	5.6_a	0.9	3.2_b	1.0	3.2_b	1.3

Note. Means are on 7-point scales, with higher values indicating higher levels of outcome justice. Means with no subscripts in common differ significantly ($p < .05$), as indicated by a least significant difference test for multiple comparisons between means (Kirk, 1982).

These findings are in accordance with previous equity studies (e.g., Van den Bos et al., 1997, 1998) and yield additional evidence that the manipulation of outcome was perceived as intended.

Recalled symbols

As expected, the large majority of the participants were able to accurately recall the symbols they were supposed to rehearse: All participants in the low-busyness condition accurately recalled the symbol they had to rehearse. Ninety-three percent of the participants in the high-busyness condition recalled at least six symbols accurately (28% of those accurately recalled six symbols, 41% accurately recalled seven symbols, and 31% accurately recalled eight symbols); the number of recalled symbols in this condition did not differ as a function of the outcome manipulation, $F < 1$. These results indicate that participants took the memorization task seriously and made an effort to recall the symbols while completing the experiment.

Cognitive busyness

A 2×3 ANOVA on the manipulation check of cognitive busyness yielded only a main effect of busyness, $F(1,162) = 201.20$, $p < .001$. Inspection of the means indicated that participants in the high-busyness condition were cognitively busier with remembering the symbols ($M = 3.1$, $SD = 1.0$) than participants in the low-busyness condition ($M = 1.4$, $SD = 1.0$). This shows that the manipulation of cognitive busyness was successful in influencing the relative strength of cognitive busyness in ways that were intended with this manipulation.

Comparability measures

The answers that participants gave on the questions that assessed whether participants thought of the other participant as a comparable person did not yield any significant results at either the multivariate level or the univariate levels. Inspection of the means indicated that participants thought that the other participant had performed equally well when answering the general knowledge questions ($M = 4.0$, $SD = 0.4$), had done equally his/her best when answering the questions ($M = 4.0$, $SD = 0.2$), and was equally good in answering the questions ($M = 4.0$, $SD = 0.3$). It can be concluded that participants thought of the other person as a comparable person with respect to the tasks they completed in the experiment.

Outcome satisfaction

A 2×3 ANOVA on the outcome satisfaction scale yielded a main effect of outcome, $F(1,162) = 34.45$, $p < .001$, and a significant interaction effect, $F(2,162) = 3.40$, $p < .04$. The main effect of cognitive busyness was not significant, $F < 1$. To interpret these effects we performed a least significant difference test for multiple comparisons between means ($p < .05$), with the six cells of our design serving as the independent variable (Kirk, 1982). Table 4 shows the result of this test and the means and standard deviations of the outcome satisfaction scale. As hypothesized, findings revealed that within the better-than-other condition, participants were more satisfied with their outcome in the high-busyness condition than in the low-busyness condition. There were no effects of cognitive busyness within the equal-to-other and worse-than-other conditions.

Additionally, it can be noted here that within the low-busyness conditions, outcome satisfaction was higher in the equal-to-other conditions than in the better-than-other condition and was higher in the better-than-other condition than in the worse-than-other condition (see Table 4). This pattern of means is in accordance with previous equity findings (e.g., Buunk & Van Yperen, 1989; Van den Bos et al., 1997, 1998). In the high-busyness condition, participants in the better-than-other condition were also more strongly satisfied than those in the worse-than-other condition, but they were as satisfied as those in the equal-to-other condition.

Discussion

The findings of Experiment 3 replicate and extend the results of Experiments 1 and 2 and are supportive of our line of reasoning: As hypothesized, findings reveal that people are more satisfied with arrangements of advantageous inequity under conditions of high cognitive

Table 4
Means and standard deviations of outcome satisfaction as a function of cognitive busyness and outcome (Experiment 3)

Cognitive busyness	Outcome					
	Equal to other		Better than other		Worse than other	
	M	*SD*	*M*	*SD*	*M*	*SD*
Low	5.3_a	1.0	4.6_b	0.8	3.9_c	1.0
High	$5.0_{a,b}$	0.8	5.1_a	0.9	3.7_c	1.0

Note. Means are on 7-point scales, with higher values indicating higher levels of outcome satisfaction. Means with no subscripts in common differ significantly ($p < .05$), as indicated by a least significant difference test for multiple comparisons between means (Kirk, 1982).

busyness than under conditions of low cognitive busyness. Furthermore, results of Experiment 3 have been obtained using an experimental paradigm in which participants directly experienced the distribution of outcomes. Thus, the predicted effects of cognitive busyness on reactions to advantageous inequity can be found using different scenario experiments (Experiments 1 and 2), using an experiment in which people directly experience the outcome distribution (Experiment 3), and using different manipulations of limiting of cognitive processing (Experiments 1 and 3 vs. 2). It can now be concluded that all three experiments reported here show that people are more satisfied with arrangements of advantageous inequity when their cognitive processing has been strongly (as opposed to weakly) limited.

A critic, however, might note two objections toward the findings presented thus far. First, a close inspection of the findings of Experiment 3 shows that, in the advantageous inequity conditions, our dependent variable of outcome satisfaction was influenced by the cognitive busyness manipulation whereas the manipulation check of outcome justice judgments was not. As noted earlier in the introduction of this paper and in the research literature (see, e.g., Messick & Sentis, 1983; Van den Bos et al., 1997, 1998), this dissociation is not surprising: Theoretically, one would expect that satisfaction evaluations are more susceptible to the conflict between egoism-based preferences and what is right, the conflict of interest in the present research. Moreover, the dissociation is consistent with other research demonstrating that satisfaction evaluations and justice judgments are quite different variables to which people can react quite differently (e.g., Austin et al., 1980; Blau, 1964). More specifically, research has shown that people often judge advantageous inequity to be unfair (indeed as unfair as disadvantageous inequity) although simultaneously they are moderately satisfied with advantageous inequity (relative to disadvantageous inequity) (see, e.g., Van den Bos et al., 1997, 1998).

Although the results of Experiment 3 are in line with our expectations, we conducted an additional experiment to rule out the alternative hypothesis that the findings obtained in that experiment were an artifact of the order in which the satisfaction and justice measures were measured in Experiment 3. Thus, to assess whether the manipulation of cognitive busyness would have influenced evaluations of outcome justice had the justice items been administered prior to the measurement of participants' satisfaction, participants in the additional experiment reacted to the same stimulus materials as in Experiment 1, including the same arrangements of advantageous inequity and the same conditions of either high or low cognitive busyness used in Experiment 1. Furthermore, we measured the same outcome satisfaction ratings as in Experiment 1 (asking participants how satisfied and happy they were with the bonus they received; $\alpha = .95$), assessed similar items that solicited participants' outcome justice judgments (asking participants how just and fair they judged the bonus they received; $\alpha = .81$), and, most importantly, varied the order in which ratings of outcome satisfaction and judgments of outcome justice were assessed.

Results of this additional experiment showed that participants' evaluations of outcome *satisfaction* yielded only a main effect of cognitive busyness, $F(1,91) = 4.23$, $p < .05$. The main effect of order of measurement, $F(1,91) = 0.48$, $p > .48$, and the interaction effect between cognitive busyness and order, $F(1,91) = 0.00$, $p > .97$, were not significant. As expected, participants were more satisfied with their outcome in the high-busyness condition ($M = 3.5$, $SD = 1.4$) than in the low-busyness condition ($M = 2.9$, $SD = 1.7$).

Furthermore, participants' judgments of outcome *justice* yielded no significant effects: The main effect of cognitive busyness, $F(1,91) = 0.79$, $p > .37$, the main effect of order of measurement, $F(1,91) = 0.07$, $p > .79$, and the interaction effect between cognitive busyness and order, $F(1,91) = 0.07$, $p > .79$, were all nonsignificant ($M = 2.9$, $SD = 1.6$). Thus, these results show that varying the order in which participants rated outcome justice and outcome satisfaction did not yield different results than those obtained in Experiment 3: Satisfaction evaluations did show significant effects of the busyness manipulation whereas justice judgments did not.

A second objection that might be raised against our series of experiments is that one can wonder whether the predicted effects of cognitive busyness on satisfaction with advantageous inequity would also show up in situations that are more similar to those faced by people in real interactions. To this end, we conducted yet another experiment in which we used an experimental paradigm that was very different from those used earlier. In brief, in Experiment 4, participants actually interacted with the experimenter and the other participant, and we induced advantageous inequity in a way that more closely resembled what may happen outside of the lab. The manipulation of cognitive busyness was also different from those used in the earlier experiments, and it had greater mundane realism. Finally, in contrast to Experiment 3, where participants were told explicitly that the other participant's performance was equivalent to theirs, in Experiment 4, we examined the generalizability of our effect to a situation in which there was more ambiguity about the other participant's inputs or performance.

Experiment 4

Method

Participants and design

Forty students (11 men and 29 women) at Utrecht University participated in the experiment and were paid for their participation. Participants were randomly

assigned to one of the conditions of cognitive busyness manipulation (low vs. high).

Experimental procedure

Participants of Experiment 4 were invited by means of flyers on different spots at the campus of Utrecht University to participate in a marketing study, ostensibly conducted by a marketing company called "TestMe-Research" to assess people's evaluations of different brands of chocolate. On the flyers, participants were informed that the study would take about 20 min of their time and that they would be paid 3 Euros for their participation (about $3 U.S. at the time the experiment was conducted).

When a participant arrived at the rooms where the marketing research would be conducted, the participant was asked to wait in the waiting room. After 1 min a same-sex other student walked into the waiting room. In reality, this student was not a real participant but was a confederate that we used to create an arrangement of advantageous inequity in a real-life way. One minute later, the experimenter came into the waiting room and informed the real participant and the bogus participant that they would participate together in the marketing study. The experimenter then led the two participants to a small room of 3×3 m where the marketing study would be conducted. In this room, the participants were seated 1 m apart from each other in such a way that the real participant could easily see the bogus participant.

The experimenter then explained that the research was conducted in commission of a marketing company called "TestMe-Research." Participants were told that this marketing company conducted many studies and that the particular study in which they would participate today would assess people's evaluations of different brands of chocolate. To this end, the experimenter explained, the participants would be asked to taste 10 different pieces of chocolate and to evaluate these pieces on different dimensions. Participants were informed that each piece of chocolate would be handed over to them while the experimenter would mention the particular brand of that piece. After carefully having tasted a piece, participants would be asked to evaluate the piece in terms of sweetness, structure, whether it tasted good or not, and what grade they would give to the piece's flavor. Participants would then drink some water and would taste and evaluate the next piece of chocolate.

In the high-busyness condition, both the real participant and the bogus participant were asked to recall all 10 brand names that the experimenter would mention to them while handing over the pieces of chocolate. In the low-busyness condition, both real and bogus participants were asked to recall only the first brand name. In both busyness conditions, both real and bogus participants were asked to recall the brand names until they would be asked to reproduce them.

Participants were told that after having tasted the 10 pieces they would be paid for their participation. As part of standard practice at "TestMe-Research," participants then would be asked to evaluate the particular study they participated in. Participants were informed that the results of this evaluation would be used to improve future studies by "TestMe-Research."

After it was made sure that participants understood the course of events, participants tasted and evaluated the 10 pieces of chocolate. After this, the experimenter paid participants for their participation. The experimenter's behavior was then used to create an arrangement of advantageous inequity: The experimenter took 6 Euro coins and laid down 4 Euros in front of the real participant and 2 Euros in front of the bogus participant. The experimenter laid down the Euros in such a way that the real participants clearly saw the amount of Euros they and the bogus participants received.

The experimenter then handed over the evaluation forms to the participants. In these forms, participants were asked several questions that pilot testing had revealed could well be part of a general marketing questionnaire. Embedded in these questions were our dependent variables and manipulation checks: The main dependent variable was assessed by asking participants how satisfied (1 = *very dissatisfied*, 7 = *very satisfied*) and happy (1 = *very unhappy*, 7 = *very happy*) they were with their payment. Participants' answers to these two items were highly correlated ($r = .63$, $p < .001$) and were averaged to form a reliable scale of perceived outcome satisfaction ($\alpha = .77$).

Participants' outcome justice judgments were solicited by asking participants how just (1 = *very unjust*, 7 = *very just*) and fair (1 = *very unfair*, 7 = *very fair*) they judged their payment to be. These items were highly correlated ($r = .78$, $p < .001$) and were averaged to form a reliable scale of outcome justice judgments ($\alpha = .87$). As check on the manipulation of cognitive busyness, participants were asked to what extent it was difficult to remember the brands of chocolate they were asked to remember (1 = *strongly disagree*, 7 = *strongly agree*) and that it took much effort to remember the brands (1 = *strongly disagree*, 7 = *strongly agree*). These items were highly correlated ($r = .82$, $p < .001$) and were averaged to form a reliable scale of cognitive busyness ($\alpha = .90$). Finally, participants were asked to write down the brand names they were supposed to rehearse. When the participants had done this, they were thoroughly debriefed and thanked for their participation.

Results

Recalled symbols

As in the previous experiments, the majority of the participants were able to accurately recall the brand names they were supposed to rehearse: All participants in the

low-busyness condition accurately recalled the brand name they had to rehearse. Seventy-five percent of the participants in the high-busyness condition recalled at least six brand names accurately (27% of those accurately recalled six brands, 20% recalled seven brands, 27% recalled eight brands, 20% recalled nine brands, and 7% recalled 10 brands). These results indicate that participants took the memorization task seriously and made an effort to recall the symbols while completing the experiment.

Cognitive busyness

As expected, the cognitive busyness scale (excluding one participant with missing values on one of the items of the scale) yielded a significant effect of the cognitive busyness manipulation, $F(1,37)=8.22$, $p<.01$. Inspection of the means indicated that participants in the high-busyness condition were cognitively busier with remembering the brand names ($M=4.8$, $SD=1.7$) than participants in the low-busyness condition ($M=3.2$, $SD=1.9$). This shows that the manipulation of cognitive busyness was successful in influencing the relative strength of cognitive busyness in ways that were intended with this manipulation.

Justice judgments

Participants' outcome justice judgments yielded no effect of the cognitive busyness manipulation, $F(1,38)=0.00$, $p>.96$, thus revealing that perceived justice of the payment participants received did not differ as a function of being in the high-busyness condition ($M=5.2$, $SD=1.6$) or the low-busyness condition ($M=5.2$, $SD=2.0$). These findings are in accordance with our justice judgment data presented earlier.

Outcome satisfaction

As predicted, the outcome satisfaction scale showed a significant effect of the manipulation of cognitive busyness, $F(1,38)=5.38$, $p<.03$. Inspection of the means revealed that, as hypothesized, participants were more satisfied with their payment in the high-busyness condition ($M=5.5$, $SD=1.0$) than in the low-busyness condition ($M=4.8$, $SD=0.7$).

General discussion

The question of how people deal with conflicts between egoism-based preferences and fairness-based concerns has fascinated and puzzled philosophers and social theorists for centuries (see, e.g., Adams, 1965; Beauchamp, 2001; Blau, 1964; Cohen, 1986; Diekmann et al., 1997; Epley & Caruso, 2004; Epley et al., 2004; Frey et al., 2003; Jacques, 1961; Loewenstein et al., 1989; Messick & Sentis, 1979, 1983; Moore & Loewenstein, 2004; Peters et al., 2004; Smeesters et al., 2003; Stouffer et al., 1949; Thibaut & Kelley, 1959). The experimental findings that have been presented here may shed new light on how to answer this question as they reveal that people are more satisfied with advantageous inequity when cognitive processing is strongly as opposed to weakly limited. These findings are in accordance with our analysis of the social psychology of advantageous inequity. Moreover, these results were obtained building on our integration of the research on person inference and correction processes with frameworks on outcome evaluation and preference and adjustment processes. The fact that we found converging evidence for our hypothesis in different experimental paradigms using different experimental manipulations is compelling and underscores the reliability of the finding revealed here that people are more satisfied with advantageous inequity under conditions of high cognitive busyness.

In Experiment 4, we tried to speak to the importance of cognitive busyness effects on satisfaction with an advantageous unfair situation in real life. Because it rightfully has been argued that social interactions often require considerable attention of people to monitor all the things that are going around (see, e.g., Bargh, 1994; Bargh & Thein, 1985; Gilbert & Osborne, 1989), the findings of the experiments that were presented here may well indicate that when people have a lot on their minds, they may react in a more self-centered way to unfair arrangements that are to their own advantage than when they have the capacity to ponder about these things more deeply.

In previous equity studies (e.g., Buunk & Van Yperen, 1989; Van den Bos et al., 1997, 1998) it has usually been found that people are more satisfied with equitable arrangements than with advantageous inequitable arrangements and that they are more satisfied with advantageous inequity than with disadvantageous inequity. In the present paper, we have replicated these effects in the conditions of Experiments 1–3 where cognitive processing was only weakly limited. More interesting, however, in all three experiments, we found that in conditions where cognitive processing was strongly limited people's evaluations of outcome satisfaction when reacting to advantageous inequity were closer to the evaluations of people reacting to equitable arrangements. In fact, findings of Experiments 2 and 3 even show that, in conditions were cognitive processing was strongly limited, people's satisfaction with advantageous inequity may not be statistically different from their satisfaction with equitable arrangements. The (small) differences in the results across our experiments may have been caused by differences in operationalizations, but it is noteworthy that in all of our studies we found that variations in cognitive processing exert reliable effects on people's satisfaction with arrangements of advantageous inequity.

Implications

Extending on the earlier-mentioned frameworks (Epley & Caruso, 2004; Epley et al., 2004; Messick & Sentis, 1979, 1983; Moore & Loewenstein, 2004) and the

work by Zajonc (1980) and others (e.g., De Houwer, Thomas, & Bayens, 2001; Stapel et al., 2002), an important implication of the findings presented here may be that when reacting to arrangements of advantageous inequity, judging the advantage is quick and easy as preferences are primary whereas adjusting this appraisal requires cognitive resources as it entails integrating fairness concerns with the initial preference appraisal. This implication would suggest a two-phase model of people's reactions to advantageous inequity, in which people's very first reaction when confronted with advantageous inequity is one of pleasure ("wow, I get more than someone else, that's great!"). This egoism-based, gut reaction may happen in an automatic manner (Bargh, 1994). Furthermore, we propose that it is only after this first automatic reaction of pleasure that people consider the fairness of the situation ("hey, but that's not fair!") This latter fairness-based reaction is not as automatic and fast as the first egoism-based reaction. People need just a little bit of time (e.g., some seconds) to discover, understand, and respond to the unfairness of a situation in which they are better off than others, and this correction process can only take place, therefore, when people have enough cognitive resources available.

Besides helping in getting more insight into the process with which people may react to advantageous inequity in lab experiments in particular, and being better off than others in society more generally, another important implication of our line of reasoning and the two-phase process it suggests, is that our findings have revealed that the hypothesis we tested here is conditional on the type of outcome distribution that is being evaluated and the exact type of evaluation that is being made. That is, our findings indicate that the effects of cognitive busyness were found reliably when satisfaction with advantageous inequity is assessed (and not when satisfaction with equity or disadvantageous inequity or when justice judgments of advantageous inequity are measured). This suggests that the relationship between preferences and fairness concerns is dependent on some specific conditions outlined in the current paper and in this way our findings may contribute to further specifying models related to people's preferences and their adjustment processes (e.g., Epley & Caruso, 2004; Epley et al., 2004; Messick & Sentis, 1979, 1983; Moore & Loewenstein, 2004; Stapel, Koomen, & Ruys, 2002; Zajonc, 1980).

As noted earlier, the findings of both Experiments 3 and 4, as well as those discussed in Discussion of Experiment 3, showed that cognitive busyness influenced evaluations of outcome *satisfaction* but not ratings of outcome *justice*. In various experiments presented here, therefore, judgments of outcome justice were not influenced by the manipulation of cognitive busyness whereas evaluations of outcome satisfaction were. In our opinion, these differential findings highlight the importance of distinguishing between judgments of justice and perceived satisfaction (cf. Austin et al., 1980; Blau, 1964; Messick & Sentis, 1983; Van den Bos et al., 1997, 1998). Moreover, as outlined in detail in the general introduction, this may imply that satisfaction evaluations are more susceptible to the conflict between egoism-based preferences and doing the right thing, the conflict of interest in the present research. Related to this, it seems reasonable to argue that explicitly asking participants to indicate their justice judgments may well have a higher likelihood of making the fairness aspects of advantageous inequitable arrangements salient than does measuring satisfaction evaluations, hence making satisfaction evaluations a better dependent variable for the hypothesis under consideration. Although we are convinced that the patterns of our findings are generalizable to other social contexts and experimental manipulations, it may be of interest for researchers to explore the boundary conditions of the effects reported here in the future. This said, however, for now, our research demonstrates that particular effects can occur, more specifically, that people tend to be more satisfied with advantageous inequity when cognitive processing is limited. This may stimulate future research into other conditions in which such effects are or are not found.

In Experiments 1–3, we included conditions of equitable and disadvantageously inequitable arrangements to determine whether effects of the cognitive busyness manipulations would be found in these conditions as well. Although we found consistent effects of cognitive busyness in the advantageous conditions, in none of the three experiments did we find any effects of cognitive busyness in the other conditions (even when we tested the effects with one-tailed t tests). These may be important findings because they indicate that it is especially when people are reacting toward advantageous inequity that their reactions are likely to influenced by being cognitively busy or not.

The absence of reliable cognitive busyness effects within the disadvantageous inequity conditions is especially interesting in this respect. After all, one could argue that when people experience disadvantageous inequity there are two sources of negative affect: (a) the displeasing feeling caused by the relative deprivation of lacking what the other person has received, and (b) the unfairness of the outcome distribution (cf. Van den Bos et al., 1997, 1998). Furthermore, because one could propose that people generally have more immediate access to or knowledge of their preferences than to what is fair (e.g., Messick & Sentis, 1983), one might reason that when people are evaluating disadvantageous inequity while their cognitive resources are simultaneously being depleted, their satisfaction evaluations would be influenced only or primarily by the displeasing aspects of the outcome distribution. In the absence of cognitive busyness, however, the individual's satisfaction should be influenced not only by the displeasing aspects of the

arrangements but also be corrected for the unfairness of the distribution as well.

Thus, one could argue that because some correction may be assumed to take place in the disadvantageous inequity conditions, it should be possible to find effects of cognitive busyness in these conditions. However, it is also conceivable that correcting one's initial impression in an opposite direction (as we argue is the case when reacting to advantageous inequity) takes up more cognitive resources than does correcting in the same direction as one's initial impression. In short, it is much more cognitively demanding to decide one's reactions to advantageous inequity than to decide one's reactions to disadvantageous inequity. Accordingly, one might expect the effects of cognitive busyness to be more evident in the advantageous inequity condition as compared to the disadvantageous inequity condition, as found in our research.

This latter account explains why consistent busyness effects were found within the advantageous conditions and unreliable effects within the disadvantageous conditions. Related to this, people have a very strong negative reaction to disadvantageous inequality under virtually all circumstances (e.g., whether they are dealing with an absolute stranger or a friend; Peters et al., 2004). The same is not true of feelings toward advantageous inequality, which depend in complex ways on the exact situation (e.g., feelings toward advantageous inequality tend to be more positive when dealing with a friend as opposed to a stranger; see Peters et al., 2004).

Furthermore, it is noteworthy that the fact that we consistently found cognitive busyness effects only in the advantageous inequity conditions discounts a more general explanation of our data, specifically, that the results are merely due to general attentional demands (cf. Messick & Sentis, 1983). Such an explanation would state that egoistic evaluations (benefits to the self) may be thought of as requiring few attentional resources and that these evaluations may be conceived of as involving automatic processes that begin early in life and that are observable across species. On the other hand, concern for the welfare of others (fairness and ethical concerns) requires deliberative, reflective appraisal processes that make greater attentional demands (Messick & Sentis, 1983).

Had this more general attentional demands explanation been true, cognitive busyness effects would have been likely to be found in disadvantageous inequity conditions as well. Instead, the current findings suggest that a more specific explanation that incorporates the direction in which evaluations are corrected, better explains the psychology of satisfaction evaluations with outcome distributions. This does not rule out the possibility that with stronger manipulations of cognitive busyness (e.g., asking participants to recall 16 as opposed to eight symbols) it will be possible to find reliable busyness effects on evaluations of disadvantageous inequity; nevertheless, on the basis of the findings reported here, we would predict that, even when including conditions of very high cognitive busyness, larger effects of busyness manipulations will be found when people are reacting to advantageous inequity.[3]

All in all, it seems reasonable to conclude that the findings reported here are in line with what was predicted on the basis of integrating the work by Messick and Sentis (1979, 1983), Moore and Loewenstein (2004), and Epley c.s. (Epley & Caruso, 2004; Epley et al., 2004) with the work by Gilbert and others (e.g., Gilbert & Osborne, 1989; Gilbert et al., 1988; Ham & Vonk, 2003), and the research reveals consistently that people are more satisfied with advantageous inequity under conditions of strongly limited cognitive processing. Future research may want to explore the implications of the findings presented here.

Future research

It is noteworthy that our suggestion that preferences are more immediate than fairness considerations corresponds with Zajonc's (1980) position that feelings and preferences may be more primary than are thoughts and inferences (see also De Houwer et al., 2001; Stapel et al., 2002). We hasten to say that the exact processes underlying Zajonc's position have been disputed (for an overview of this discussion, see, e.g., Winkielman & Cacioppo, 2001) and similarly that the implications that follow from our research should be validated in future research. In particular, more research is needed, of course, to elucidate the subtle but potentially exciting psychological processes involved when people are faced with conflicts between preferences and their inclinations of doing the right thing. It is our hope that our experimental findings provide a new perspective on the empirical study of preferences and fairness concerns and that the current paper may therefore stimulate researchers to investigate the implications of the studies presented here.

Furthermore, it should be pointed out explicitly that the current paper confirms patterns of important effects that have been predicted by the classical and modern social psychological frameworks mentioned earlier, but the patterns reported here have implications for whether or not the processes implicated by these frameworks hold up in the long run. Indeed, in the future, researchers may productively investigate the psychological processes

[3] Indeed, in Experiment 1 there was some tendency for participants to be more satisfied with disadvantageous inequity under conditions of high as opposed to low cognitive busyness. However, this effect was not statistically significant, $t(41) = 1.27$, $p < .11$ (one-tailed), was not replicated in the other experiments, and—as would be predicted by our account—was weaker than the cognitive busyness effect within the advantageous inequity condition.

suggested by our research findings. We hope that our findings stimulate further interest in the captivating interplay between egoism- and fairness-based factors of outcome evaluations as well as more general preference and adjustment processes.

A candidate for another process explaining people's reactions to advantageous inequity may be suggested by a study by Rivera and Tedeschi (1976). Participants in the bogus pipeline condition of this study were led to believe that a bogus apparatus could detect their true feelings by implicit muscle responses whereas participants in a paper-and-pencil condition were not given this impression. Furthermore, in the bogus pipeline condition, dependent variables were measured by asking participants to indicate their ratings by turning a dial moving a pointer along a meter. In the paper-and-pencil condition, dependent variables were assessed using the normal paper-and-pencil procedures. Findings indicated that participants reported more happiness with advantageous inequity in the bogus pipeline condition than in the paper-and-pencil condition. Rivera and Tedeschi's account for their findings is that when paper-and-pencil procedures are used people's reactions are public whereas when bogus pipeline procedures are used reactions are private. The authors further argue that, because people want to create positive impressions of themselves to others, they will report less happiness with advantageous inequity in public circumstances.

It should be emphasized, however, that the Rivera and Tedeschi (1976) results have received an enormous amount of criticism (see, e.g., Ellard, Meindl, & Lerner, 2004), and that more recent research findings suggest that fairness is important to people even in completely private circumstances (see, e.g., Turillo, Folger, Lavelle, Umphress, & Gee, 2002). Furthermore, there are several issues that limit the validity of Rivera and Tedeschi's (1976) interpretation of their findings, such as the confound between the bogus pipeline procedure (present vs. absent) and the way in which dependent variables were assessed (dial equipment vs. paper and pencil). Moreover, it is not clear whether participants indeed perceived the paper-and-pencil conditions to be more public.

In addition, Roese and Jamieson (1993) noted in their thorough review of the bogus pipeline research that when researchers wish to import the bogus pipeline procedure to their research domain in an effort to reduce impression management and social desirability effects, they should first demonstrate that some form of impression management bias indeed influences reactions in the domain of interest. Roese and Jamieson (1993) suggest that an obvious way to accomplish this would be to associate reactions in the domain of interest with responses on impression management or social desirability scales. To the best of our knowledge, there have been no equity studies that have incorporated one of these scales. If future research findings would indeed support Rivera and Tedeschi's (1976) account of the difference between public and private reactions to advantageous inequity (but see Ellard et al., 2004; Turillo et al., 2002), we would suggest that this account is congruent with the line of reasoning we have put forward here: In private circumstances, preferences may influence people's outcome evaluations more strongly than in public situations. In public (as opposed to private) circumstances people may be more strongly motivated to incorporate fairness-based considerations to convey a positive impression of themselves to others, especially when they have enough cognitive capacity for doing so. We explicitly want to note here that both the social desirability effects suggested by the Rivera and Tedeschi (1976) study as well as the preferences versus fairness considerations line of thinking presented earlier in this paper need further research, as does the relationship between these two lines of thought and the processes they suggest.

In concluding, it is important to note that our line of reasoning does not imply that preferences and pleasure are always selfish, as people sometimes may prefer or be pleased to see that other persons than themselves (such as their children or persons in need) receive more of a valued resource than they themselves receive. Although our findings suggest that people's primitive core may sometimes (e.g., when their cognitive capacities have been severely limited) push them in an egocentric direction, it may well be the case that frequently people try to free cognitive resources to do the right thing. Thus, we are not suggesting that fairness concerns are a myth. Quite the contrary, we work from the assumption that fairness is frequently a very real concern to people (Van den Bos & Lind, 2002; see also Miller & Ratner, 1998). That said, we also think that researchers should thoroughly study the conditions under which fairness is more of a concern to people and when it is less important to them, as well as the processes underlying people's considerations of fairness. It is our hope that with this paper we have contributed a bit to what we see as the process-oriented future of the social psychology of preferences and doing the right thing.

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