Journal of Personality and Social Psychology
1997, Vol. 72, No. 1, 95-104

0022-3514/97/$3.00

Procedural and Distributive Justice: What Is Fair Depends More on What Comes First Than on What Comes Next

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In this article, 2 experiments are presented. In both experiments, the independent variables were whether the procedure was accurate or inaccurate, whether the outcome was favorable or unfavorable, and whether participants were informed about the procedure before or after they were informed about the outcome. The independent variables were manipulated by means of scenarios in Experiment 1 and by means of the R. Vermunt, A. P. Wit, K. van den Bos, and E. A. Lind (1996) paradigm in Experiment 2. As predicted on the basis of the authors' analysis of fairness heuristic theory, the findings revealed that what people judge to be fair is more strongly affected by information that is received first than by subsequently received information. The findings are discussed in terms of recent developments toward an integration of the procedural and distributive justice domains.

For a long time, social scientists have recognized that justice is a key issue in our lives (see Cohen, 1986, for an overview). In social psychology, a number of theories deal with people's concerns about fairness. For instance, *equity theory* (Adams, 1965; Walster, Walster, & Berscheid, 1978) states that people judge an outcome as fair when the ratio of their own inputs and outputs equals the ratio of inputs and outputs of comparison others. Another important conception of justice is formulated in *relative deprivation theory* (e.g., Crosby, 1976; Stouffer, Suchman, DeVinney, Star, & Williams, 1949), which argues that people judge outcomes as unfair when the outcomes they actually receive fall short of the outcomes they expected to receive. Although equity theory and relative deprivation theory differ in a number of ways, they are both theories of distributive justice, because both focus on the fairness of outcomes that people receive.

In the mid-1970s, Thibaut and Walker (1975) noted that there were two separable aspects of legal settings that might affect litigants' fairness judgments: the outcome of a court trial and the manner in which the trial was conducted. Research by Thibaut, Walker, and their colleagues (LaTour, 1978; Thibaut & Walker, 1975; Walker, LaTour, Lind, & Thibaut, 1974) showed that, indeed, both the procedure and the outcome of a trial affect litigants' fairness judgments. Since then, a number of studies have shown effects of *procedural justice* as well as *distributive justice* in various contexts, such as organizations (Greenberg, 1990), politics (Tyler & Caine, 1981), and interpersonal relations (Barrett-Howard & Tyler, 1986). Furthermore, subsequent research has revealed that the distinction between procedural and distributive justice is not merely a conceptual one, invented by theorists, but arises naturally in people's cognitions about justice. In research by Greenberg (1986) and by Sheppard and Lewicki (1987), respondents were asked to describe fair and unfair events that had occurred in their lives. The findings of these studies indicate that people themselves make a distinction between issues related to procedural justice and issues related to distributive justice.

Initial procedural justice research was conducted primarily to distinguish procedural justice concerns from distributive justice concerns. For example, experiments by Walker et al. (1974), LaTour (1978), and Tyler and Caine (1981, Studies 1 and 3) manipulated procedures independent of outcomes, and, in addition to main effects of outcome, all these experiments yielded main effects of procedure. Furthermore, interactions between procedure and outcome were rare in these experiments: Walker et al. (1974) found no interactions on participants' procedural fairness judgments or on a number of satisfaction measures. Similarly, although LaTour's (1978) findings suggest that the effects of procedure may be more dominant in unfavorable-outcome conditions than in favorable-outcome conditions, the interaction did not reach conventional levels of significance. Finally, Tyler and Caine (1981) found no interactions in Study 1, and only one significant interaction in Study 3 (indicating that leadership evaluations were especially low when undesirable procedures led to unfavorable outcomes).

These experiments suggest that issues of procedural justice

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A previous version of this article was presented at the Fifth International Conference on Social Justice Research, Reno, Nevada, June 1995, and was submitted to Leiden University as part of the doctoral dissertation of Kees van den Bos. The work reported in this article was partially supported by Grant SIR 12-1866 from Nederlandse Organisatie Voor Wetenschappelijk Onderzoek (NWO). We are grateful to Eric van Dijk for his valuable comments during various stages of this project; and to Norbert L. Kerr, E. Allan Lind, Laura T. Sweeney, and Marcel Zeelenberg for their helpful comments on drafts of this article. We further thank Karin Bloemendaal, Clara Buter, Laura Eysberg, Jessica Halgren, Gert-Pieter Lanser, Maike van Aartsen, Eileen van den Tweel, and Annemiek van Soest for their assistance in collecting the data of Experiment 1.

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might be relatively unaffected by issues of distributive justice (Lind & Tyler, 1988). Furthermore, the findings of survey research examining the relationship between procedural and distributive justice suggest that procedural justice is more important than distributive justice. For example, in survey studies conducted with respondents involved in settings such as court trials (Lind, Kulik, Ambrose, & De Vera Park, 1993; Tyler, 1984), organizations (Folger & Konovsky, 1989), police–citizen encounters (Tyler & Folger, 1980), and political situations (Tyler & Caine, 1981, Studies 2 and 4; Tyler, Rasinski, & McGraw, 1985), it has been shown that variables related to procedural justice explain more variance in judgments of fairness than variables related to distributive justice.

The findings in the previous paragraphs led some procedural justice researchers to conclude that the process leading to the formation of fairness judgments may be more strongly affected by procedures than by outcomes. On the first page of their book on the social psychology of procedural justice, Lind and Tyler (1988) even wrote that "this book . . . views people as more interested in issues of process than issues of outcome" (p. 1). In view of the evidence described above, since 1988, Lind and Tyler have accounted for the above-described justice findings by proposing a number of procedural justice theories, all emphasizing the unique qualities people ascribe to procedures. For example, Lind and Tyler proposed the *group-value model,* which argues that because people want to belong to groups, and because procedures reveal much information about how one is valued as a group member, people consider procedures to be very important.

Thus, procedural justice research nowadays tends to focus on one aspect of the process leading to the formation of fairness judgments (i.e., procedures). Greenberg (1990), however, concluded the following: "Evidence showing that procedural justice factors accounted for more variance in perceptions of fairness than distributive justice factors . . . was important insofar as it helped highlight the value of the procedural justice concept and subjected it to further study. However, such findings should not be taken as evidence of the unimportance of distributive justice factors" (p. 425). As an illustration that distributive justice does matter, Brockner and Wiesenfeld (1996) pointed out that in recent studies, significant Procedure × Outcome interactions have been found (e.g., Brockner, 1990, 1994; Brockner et al., 1994; Brockner, Wiesenfeld, & Martin, 1995; Cropanzano & Folger, 1989; Folger & Martin, 1986; Folger, Rosenfield, & Robinson, 1983; Greenberg, 1993; Lind & Lissak, 1985). Brockner and Wiesenfeld further argued that there is good theoretical reason to expect interactions between procedures and outcomes (below we present one theory that predicts Procedure × Outcome interactions; for an overview of theories, see Brockner & Wiesenfeld, 1996).

Furthermore, Lind and Lissak (1985) argued—among other things—that the absence of significant interaction effects in the early experiments of Walker et al. (1974), LaTour (1978), and Tyler and Caine (1981, Studies 1 and 3) may have been due to the fact that in those early experiments, the effects of outcome favorability were studied by comparing them in the contexts of two relatively desirable procedures, as opposed to comparing them under the influence of a desirable procedure versus an undesirable procedure. Lind and Lissak further argued—and their findings support this reasoning—that in the context of an undesirable procedure (e.g., an improperly enacted procedure), the effect of outcome favorability on fairness judgments will be increased, as compared with the context of a desirable procedure (e.g., a properly enacted procedure). This does not suggest that the absence of interaction effects in the early experiments (LaTour, 1978; Tyler & Caine, 1981, Studies 1 and 3; Walker et al., 1974) should be taken as evidence for the independence of procedural and distributive justice, but instead suggests that the manipulations in these experiments may not have been precise enough to produce statistically significant interaction effects.

Distributive justice researchers, on the other hand, also tend to focus on one aspect of the process with which people form fairness judgments (i.e., outcomes). Some researchers even suggest that outcomes may be more important for people's fairness judgments than procedures (e.g., Lerner & Whitehead, 1980; Rutte & Messick, 1995). Thus, both procedural and distributive justice research tend to focus on one aspect of the fairness judgment process, at the expense of other important aspects. As Greenberg (1990), Brockner and Wiesenfeld (1996), Cropanzano and Folger (1989), Folger (1984), and Sweeney and McFarlin (1993) pointed out, it is now time to integrate the procedural and distributive justice domains.

Toward an Integration of the Procedural and Distributive Justice Domains

Below we introduce the most recent of Lind and Tyler's theories, after which we provide a careful analysis of this theory. Our analysis reveals that explicit attention to the order in which information about procedures and outcomes is received might deepen our understanding of procedural and distributive justice and might provide a point of departure for integrating the two research domains.

Fairness heuristic theory (Lind, 1992, 1994; Lind et al., 1993) is the most recent of Lind and Tyler's procedural justice theories and is based on the group-value model (Lind & Tyler, 1988) and the relational model (Tyler & Lind, 1992). Two elements in the fairness heuristic theory are worth noting here. The first element is Lind's psychological analysis of fairness judgments: Fairness heuristic theory assumes that because ceding authority to another person provides an opportunity for exploitation, people frequently feel uncertain about their relationship with an authority. Therefore, the theory argues, people may ask themselves whether the authority can be trusted, whether the authority will treat them in an honest and nonbiased way, and whether the authority will view them as a full-fledged member of society (cf. Tyler & Lind, 1992). It is further argued that the most common approach to the resolution of this uncertainty is to refer to impressions of fairness to decide whether the authority is trustworthy, will be neutral, and will accord one appropriate standing. As a result of this, the moment people enter a situation, they start searching for information on which they can build fairness judgments. Furthermore, it is argued that once people have established fairness judgments, perceived fairness serves as a heuristic for interpreting subsequent events. Therefore, the theory suggests, fairness judgments are more strongly influenced by information that is available in an earlier stage of interaction

with the authority than by information that becomes available at a later moment in time.

The second element that Lind put forward in fairness heuristic theory was that in many situations, information about the procedure is available before information about the outcome. For example, the manner in which a court trial is conducted is usually known before the verdict becomes apparent. Consequently, fairness heuristic theory proposes that people form their fairness judgments on the basis of the fairness of the procedure and then later incorporate outcome information into their fairness judgments. In Lind's (e.g., 1994) view, this explains why so many studies have found that information about procedures affects people's fairness judgments more strongly than information about outcomes.

We would like to argue here, however, that this second element is not always true, because in everyday life, people sometimes learn about outcomes before they are informed about procedures. For example, consider the situation in which an applicant has to complete a number of tests as part of a standard selection process (e.g., an intelligence test, a mathematics test, and a personality test). A week after she has completed these tests, she is informed that she gets the job. Furthermore, a month after being informed about the outcome of the selection process, she is told that only one of the tests was graded.

An experiment conducted by Lind, Kanfer, and Early (1990) provides another example. In this experiment, the number of tasks to be completed served as the outcome, and there was a manipulation of whether participants received an opportunity to voice their opinion before the experimenter had decided about the outcome (predecision voice), after the experimenter had decided about the outcome (postdecision voice), or not at all. In fact, the Lind et al. (1990) study is the only research we know of that took into consideration the effects on fairness judgments in situations in which outcomes were known before, versus after, procedures had become known (see Boles & Messick, 1990, for research on whether people accept unexpected payment in an ultimatum game when they have not yet been informed about the allocation procedure versus when they have been informed about the procedure). The manipulations of the Lind et al. (1990) experiment, however, had two drawbacks. First, the desirability of the procedure was not crossed with the favorability of the outcome. More important, the desirability of the voice procedure was confounded with whether participants were or were not yet informed about the outcome. That is, being allowed an opportunity to voice one's opinion about the outcome to be distributed before the experimenter has decided on the outcome is substantially different from being allowed voice after the experimenter has already decided on the outcome. The first aim of the present study was to manipulate independently whether information about an outcome (either favorable or unfavorable) became available before or after information about the procedure (either desirable or undesirable). As is shown below, this had surprising implications for the understanding of procedural and distributive justice.

The second aim of this study was to further specify the first element of fairness heuristic theory: the psychological processes with which fairness judgments are formed. We argue that the process of forming fairness judgments will comprise two successive phases. In the first phase, people are informed about either the procedure only or the outcome only, and in the second phase, people are informed about both the procedure and the outcome. We further suggest that in the first phase, people start searching for information on which they can build fairness judgments. Because either only procedure information or only outcome information is available in the first phase, people will construct their fairness judgments on the basis of either the procedure or the outcome. Furthermore, on the basis of the line of reasoning of fairness heuristic theory that was presented earlier, we argue that people's fairness judgments will be more strongly affected by information that is available earlier than by information that becomes known at a later moment in time. Therefore, we predict that fairness judgments will be more strongly affected by procedural desirability when procedures are presented first than when procedures are presented second (Hypothesis 1). We also predict that perceived fairness will be more strongly affected by outcome favorability when outcomes are presented first as opposed to when outcomes are presented second (Hypothesis 2).

We further suggest that a consequence of procedure and outcome information may be derived from a diverse body of research that suggests that negative or unexpected information is more likely to initiate sense-making or information-seeking activity than positive or expected information. This notion has become a central tenet of major theoretical treatments of attributions (Weiner, 1985); person evaluations (Peeters & Czapinski, 1990); persuasion (Eagly & Chaiken, 1993; Petty & Cacioppo, 1986); counterfactuals (Gleicher et al., 1990; Kahneman & Miller, 1986); and social justice (Brockner & Wiesenfeld, 1996; Cohen, 1982; Lind & Lissak, 1985; Utne & Kidd, 1980). We suggest that both an undesirable procedure and an unfavorable outcome may serve as a negative or unexpected event and, hence, is more likely to trigger cognitive analysis than either a desirable procedure or a favorable outcome. Therefore, we argue that people who find themselves subject to an undesirable procedure will use the outcome more as a source of information than people who find themselves subject to a desirable procedure. We also suggest that people who find themselves faced with an unfavorable outcome will use the procedure more as a source of information than people who find themselves faced with a favorable outcome. Thus, we predict that outcome favorability will affect people's fairness judgments more strongly when the procedure is undesirable than when the procedure is desirable and that procedural desirability will affect perceived fairness more strongly when the outcome is unfavorable as opposed to when the outcome is favorable (Hypothesis 3).

Experiment 1

As a first test of Hypotheses 1, 2, and 3, participants in Experiment 1 read and responded to stimulus information manipulated by means of scenarios. In the scenarios, participants were informed about a procedure as well as an outcome. Because Vermunt, Wit, Van den Bos, and Lind (1996) established that the accuracy of a procedure is positively related to its desirability (see also Barrett-Howard & Tyler, 1986; Leventhal, 1980), we manipulated the accuracy of the procedure: The procedure was either accurate or inaccurate. Participants also received information about the outcome, which was either favor-

able or unfavorable. The third independent variable that was manipulated was the order in which participants were informed about the procedure and the outcome: Participants received information about the procedure before they were informed about the outcome or received outcome information before receiving procedure information. Participants' procedural and distributive fairness judgments were the dependent variables.

Method

Participants and design. One hundred and sixty-four students (71 men and 93 women) at Leiden University participated in the experiment and were paid for their participation. Participants were randomly assigned to one of the conditions of the 2 (procedure: accurate vs. inaccurate) × 2 (outcome: favorable vs. unfavorable) × 2 (order: procedure before outcome vs. outcome before procedure) factorial design.

Experimental procedure. Participants read the scenario and answered the questions that constituted the dependent variables before or after participating in other, unrelated experiments. The experiments lasted a total of 1½ hr and participants were paid 15 Dutch guilders. On arrival at the laboratory, participants were led to separate cubicles, each containing a computer with a monitor and a keyboard. The computers were used to present the stimulus information and to measure the dependent variables.

First, participants were asked to imagine the following situation:

> You are someone who wants a job. You have applied for a vacant position in an organization, MicroMac Inc., and you want this position very much. MicroMac informs you that they are interested in you and they invite you to participate in the selection process that, as a standard procedure, all screened applicants at MicroMac have to complete. The selection process consists of nine parts: an intelligence test, a personality test, a test assessing mathematics skills, a test assessing understanding of technical matters, a test assessing calculation skills, a test assessing language skills, a questionnaire assessing demographic data, a test assessing achievement motivation, and an interview with a personnel officer at MicroMac. You go to MicroMac and participate in the selection process.

This was followed by the manipulation of order: In the condition where participants were informed about the procedure before they received information about the outcome, the procedure was manipulated first. Participants read the sentence (manipulated information in italics):

> A week after you participated in the selection process you are informed that *all 9 parts/1 of the 9 parts* of the selection process was graded.

After this, the outcome was manipulated (manipulated information in italics):

> A month after this you are informed that you *get/do not get* the job.

In the condition where participants were informed about the outcome before they received information about the procedure, the outcome was manipulated first. Participants read the sentence (manipulated information in italics):

> A week after you participated in the selection process you are informed that you *get/do not get* the job.

After this, the procedure was manipulated (manipulated information in italics):

> A month after this you are informed that *all 9 parts/1 of the 9 parts* of the selection process was graded.

After participants had read the scenario, they were asked to indicate how fair they considered the way in which the outcome of the selection process was assessed, on a 7-point Likert-type scale ranging from *very unfair* (1) to *very fair* (7), and how fair they judged the outcome of the selection process to be, on a 7-point Likert-type scale ranging from *very unfair* (1) to *very fair* (7).

Results

To analyze the data, we conducted a 2 × 2 × 2 multivariate analysis of variance (MANOVA), followed by simple effects analysis, and for each dependent variable, we performed Fisher's least significant difference test for multiple comparisons between means ($p < .05$). The means of the dependent variables in Experiment 1 are presented in Table 1. The two dependent variables were positively correlated ($r = .76$, $p < .01$).

A three-way MANOVA on the dependent variables showed main effects of procedure at both the multivariate and the univariate levels: Multivariate $F(2, 155) = 61.67$, $p < .001$; for procedural fairness, $F(1, 156) = 84.52$, $p < .001$; for distributive fairness, $F(1, 156) = 95.27$, $p < .001$. Evidence was also indicated for main effects of outcome, multivariate $F(2, 155) = 49.09$, $p < .001$; for procedural fairness, $F(1, 156) = 56.88$, $p < .001$; for distributive fairness, $F(1, 156) = 84.23$, $p < .001$. More important, however, evidence was found that these main effects were qualified by the interactions predicted by Hypotheses 1, 2, and 3.

Procedure × Order interactions were found: Multivariate $F(2, 155) = 14.05$, $p < .001$; for procedural fairness, $F(1, 156) = 17.82$, $p < .001$; for distributive fairness, $F(1, 156) = 22.94$, $p < .001$. In line with Hypothesis 1, the difference between the accurate and the inaccurate procedures was greater when procedure was presented first than when procedure was presented second: Procedure affected the dependent variables more

Table 1
Mean Fairness Judgments by Accuracy of Procedure, Favorability of Outcome, and Order of Presentation (Experiment 1)

	Order			
	Procedure before outcome		Outcome before procedure	
Dependent variable	Accurate procedure	Inaccurate procedure	Accurate procedure	Inaccurate procedure
Procedural fairness				
Favorable outcome	5.4_a	3.2_b	5.2_a	4.9_a
Unfavorable outcome	5.2_a	1.8_c	3.6_b	1.8_c
Distributive fairness				
Favorable outcome	5.7_a	3.4_b	5.6_a	5.5_a
Unfavorable outcome	5.6_a	1.9_c	3.6_b	1.6_c

Note. Entries are means on 7-point Likert-type scales; higher values indicate more positive ratings of the dependent variable in question. For each dependent variable, means with different subscripts differed at $p < .05$ in the Fisher least significant difference test.

strongly when procedure was presented first: Multivariate $F(2, 155) = 68.94, p < .001, \eta^2 = .47$; for procedural fairness, $F(1, 156) = 92.26, p < .001, \eta^2 = .37$; for distributive fairness, $F(1, 156) = 108.50, p < .001, \eta^2 = .41$; than when procedure was presented second: Multivariate $F(2, 155) = 8.26, p < .001, \eta^2 = .10$; for procedural fairness, $F(1, 156) = 12.06, p < .01, \eta^2 = .07$; for distributive fairness, $F(1, 156) = 12.06, p < .01, \eta^2 = .07$.

Furthermore, evidence was found for Outcome × Order interactions: Multivariate $F(2, 155) = 15.02, p < .001$; for procedural fairness, $F(1, 156) = 14.61, p < .001$; for distributive fairness, $F(1, 156) = 27.58, p < .001$. In agreement with Hypothesis 2, the difference between the favorable and the unfavorable outcomes was greater when outcome was presented first, as opposed to when outcome was presented second. Outcome had a greater impact when it was presented first: Multivariate $F(2, 155) = 57.68, p < .001, \eta^2 = .43$; for procedural fairness, $F(1, 156) = 63.03, p < .001, \eta^2 = .29$; for distributive fairness, $F(1, 156) = 101.62, p < .001, \eta^2 = .39$; than when outcome was presented second: Multivariate $F(2, 155) = 5.14, p < .01, \eta^2 = .06$; for procedural fairness, $F(1, 156) = 7.09, p < .01, \eta^2 = .04$; for distributive fairness, $F(1, 156) = 7.90, p < .01, \eta^2 = .05$.

Procedure × Outcome interactions were also revealed: Multivariate $F(2, 155) = 8.71, p < .001$; for procedural fairness, $F(1, 156) = 10.14, p < .01$; for distributive fairness, $F(1, 156) = 14.90, p < .001$. In accordance with Hypothesis 3, it was found that outcome had a greater impact when procedure was inaccurate than when procedure was accurate, and that procedure had a greater impact when outcome was unfavorable than when outcome was favorable. Outcome affected the dependent variables more strongly when procedure was inaccurate: Multivariate $F(2, 155) = 48.56, p < .001, \eta^2 = .39$; for procedural fairness, $F(1, 156) = 56.47, p < .001, \eta^2 = .27$; for distributive fairness, $F(1, 156) = 83.18, p < .001, \eta^2 = .35$; than when procedure was accurate: Multivariate $F(2, 155) = 7.89, p < .01, \eta^2 = .09$; for procedural fairness, $F(1, 156) = 9.13, p < .01, \eta^2 = .06$; for distributive fairness, $F(1, 156) = 13.55, p < .001, \eta^2 = .08$. Procedure affected the dependent variables more strongly when outcome was unfavorable: Multivariate $F(2, 155) = 59.14, p < .001, \eta^2 = .43$; for procedural fairness, $F(1, 156) = 77.82, p < .001, \eta^2 = .33$; for distributive fairness, $F(1, 156) = 94.20, p < .001, \eta^2 = .38$; than when outcome was favorable: Multivariate $F(2, 155) = 12.66, p < .001, \eta^2 = .14$; for procedural fairness, $F(1, 156) = 18.74, p < .001, \eta^2 = .11$; for distributive fairness, $F(1, 156) = 18.21, p < .001, \eta^2 = .10$. Other effects in the 2 × 2 × 2 MANOVA were not significant (all $Fs < 1$).

Discussion

The findings of Experiment 1 show that people's fairness judgments are more strongly affected by procedural desirability when procedures are presented first than when procedures are presented second. The findings also support our reasoning that perceived fairness is more affected by outcome favorability when outcomes are available first than when outcomes are available second. The findings further support our suggestion that the manipulations in earlier studies of Walker et al. (1974), LaTour (1978), and Tyler and Caine (1981, Studies 1 and 3) may not have been precise enough to establish interaction effects between procedures and outcomes. Outcome favorability affects perceived fairness more strongly when the procedure is undesirable as opposed to when the procedure is desirable, and procedural desirability affects people's fairness judgments more when the outcome is unfavorable than when the outcome is favorable.

Thus, we conclude that what people judge to be fair is more strongly affected by information that is available earlier than by information that becomes available at a later moment in time. In Experiment 1, however, participants read a scenario in which they were asked to imagine that they were involved in a situation and to judge the fairness of the procedure and the fairness of the outcome in this hypothetical situation. One might wonder whether similar results would be obtained when participants were exposed to a situation in which they directly experienced the fairness of the procedure as well as the fairness of the outcome. In the experimental situation developed by Vermunt et al. (1996), participants directly experience the fairness of both a procedure and an outcome. As a second test of our predictions, therefore, the same independent variables were manipulated in an experiment using the Vermunt et al. paradigm.

As an attempt to show that perceived justice is important for our understanding of social behavior in general, a second aim of Experiment 2 was to investigate whether our independent variables not only would affect procedural and distributive fairness judgments but also would affect subsequent evaluations and behavior. Therefore, in addition to procedural and distributive fairness judgments, participants' satisfaction and their intention to protest served as dependent variables in Experiment 2.

Experiment 2

Method

Participants and design. One hundred and sixty students (55 men and 105 women) at Leiden University participated in the experiment, and were paid 10 Dutch guilders for their participation. Participants were randomly assigned to one of the conditions of the 2 (procedure: accurate vs. inaccurate) × 2 (outcome: favorable vs. unfavorable) × 2 (order: procedure before outcome vs. outcome before procedure) factorial design.

Experimental procedure. Participants were invited to the laboratory to participate in a study on how people make estimations. On arrival at the laboratory, participants were led to separate cubicles, each containing a computer with a monitor and a keyboard. Participants were told that the computers were connected to one another and that the experimenter could communicate with them by means of the computer network. The computers were used to present the stimulus information and to collect data on the manipulation checks and the dependent variables.

Participants were instructed that they would perform an estimation test consisting of 10 estimation items. The estimation items were then explained: For each estimation item, figures would be presented on the computer screen. Participants were informed that each figure would consist of 180 squares and that each square would be either black or white. For each estimation item, a figure was presented of 5 s on the computer screen, and the participants' task was to estimate the number of black squares in the figure (cf. De Gilder & Wilke, 1990). Furthermore, participants were informed that at the end of the experiment, they would receive a bonus of 5 Dutch guilders if they succeeded in passing the estimation test (actually, after all participants had completed the experiment, the bonus was randomly given to 1 participant, a procedure none

of the participants objected to). After participants had practiced three times with the estimation items, the estimation test began.

After the estimation test, the manipulations were induced. In the condition where participants were informed about the procedure before they received information about the outcome, participants first received information about the procedure that was used to assess the outcome of the estimation test. In the accurate-procedure condition, the participants were told, by means of the computer network, that the experimenter had graded all 10 estimation items to assess the outcome of the estimation test (in reality, however, all stimulus information was preprogrammed). In the inaccurate-procedure condition, participants were informed that the experimenter had graded 1 of the 10 estimation items. To ensure comprehension of the procedure that was followed, participants were asked how many estimation items the experimenter had graded. After this, these participants were informed about the outcome of the estimation test. In the favorable-outcome condition, the experimenter informed the participants that they had succeeded in passing the estimation test. In the unfavorable-outcome condition, participants were informed that they had not succeeded in passing the estimation test. To ensure comprehension of the outcome, participants were asked whether they had or had not succeeded in passing the estimation test.

In the condition where participants were informed about the outcome before they received information about the procedure, participants first received information about the outcome of the estimation test. In the favorable-outcome condition, the experimenter informed the participants that they had succeeded in passing the estimation test. In the unfavorable-outcome condition, participants were informed that they had not succeeded in passing the estimation test. To ensure comprehension of the outcome, participants were asked whether they had or had not succeeded in passing the estimation test. After this, these participants were informed about the procedure used to assess the outcome of the estimation test. In the accurate-procedure condition, participants were informed that the experimenter had graded all 10 estimation items. In the inaccurate-procedure condition, participants were informed that the experimenter had graded 1 of the 10 estimation items. To ensure comprehension of the procedure that was followed, participants were asked how many estimation items the experimenter had graded.

After this, all participants were asked questions pertaining to the dependent variables and the manipulation checks. Procedural fairness judgments were measured by asking participants to rate how fair they considered the procedure used to assess the outcome of the estimation test, on a scale ranging from *very unfair* (1) to *very fair* (7). Distributive fairness judgments were solicited by asking participants to rate how fair they considered the outcome of the estimation test to be, on a scale ranging from *very unfair* (1) to *very fair* (7). Satisfaction was assessed by asking participants to rate how satisfied they were, on a scale ranging from *very dissatisfied* (1) to *very satisfied* (7). To assess intention to protest, participants answered three questions. They rated to what extent they were willing to criticize the situation, on a scale ranging from *very weak* (1) to *very strong* (7); to what extent they were willing to protest against the situation, on a scale ranging from *very weak* (1) to *very strong* (7); and to what extent they would be willing to participate in the study for a second time, on a scale ranging from *definitely will not participate* (1) to *definitely will participate* (7). After we recoded the last item, we averaged the three items' scores, to form an index of protest intention (Cronbach's $\alpha = .84$). As a check on the manipulation of procedure, participants were asked to rate how accurate they considered the procedure that was used to assess the outcome of the estimation test, on a scale ranging from *very inaccurate* (1) to *very accurate* (7). To check for the induction of outcome, participants were asked to rate how favorable they considered the outcome of the estimation test, on a scale ranging from *very unfavorable* (1) to *very favorable* (7). As a check on the manipulation of order, participants were asked to rate to what extent they agreed with the statement that they had been informed about the number of estimation items that had been graded before they received information of whether they had passed the estimation test, on a scale ranging from *strongly disagree* (1) to *strongly agree* (7), and to what extent they agreed with the statement that they had been informed about whether they had passed the estimation test before they were informed about the number of estimation items that had been graded, on a scale ranging from *strongly disagree* (1) to *strongly agree* (7). When the participants had answered these questions, they were thoroughly debriefed and paid for their participation.

Results

Manipulation checks. For each manipulation check, we analyzed participants' answers by conducting a $2 \times 2 \times 2$ analysis of variance. Answers on the question about the accuracy of the procedure indicated a main effect of procedure only, $F(1, 152) = 1117.65$, $p < .001$. Participants in the accurate-procedure condition judged the procedure to be more accurate ($M = 6.1$) than participants in the inaccurate-procedure condition ($M = 1.1$). Participants' answers on the question about the favorability of the outcome of the estimation test showed a main effect of outcome only, $F(1, 152) = 301.05$, $p < .001$. Participants in the favorable-outcome condition judged the outcome to be more favorable ($M = 5.7$) than participants in the unfavorable-outcome condition ($M = 2.6$). Answers on the question about whether procedure information was presented before outcome information yielded a main effect of order only, $F(1, 152) = 308.45$, $p < .001$. Participants in the condition where procedure information was presented first agreed more with the statement ($M = 6.2$) than participants in the condition where outcome information was presented first ($M = 2.0$). Participants' answers on the question about whether outcome information was presented before procedure information revealed a main effect of order only, $F(1, 152) = 3216.35$, $p < .001$. Participants in the condition where outcome information was presented first agreed more with the statement ($M = 5.8$) than participants in the condition where procedure information was presented first ($M = 1.6$). It can be concluded that the independent variables were perceived as intended.

Dependent variables. The results were analyzed by conducting a three-way MANOVA, followed by simple effects analyses, and for each dependent variable, we performed Fisher's least significant difference test for multiple comparisons between means ($p < .05$). The means of the dependent variables in Experiment 2 are presented in Table 2. The correlations between the dependent variables are displayed in Table 3. (The pattern of the correlations did not differ as a function of order, and therefore, the overall correlations are presented in Table 3.)

A $2 \times 2 \times 2$ MANOVA yielded main effects of procedure at both the multivariate and the univariate levels: Multivariate $F(4, 149) = 47.39$, $p < .001$; for procedural fairness, $F(1, 152) = 141.48$, $p < .001$; for distributive fairness, $F(1, 152) = 69.79$, $p < .001$; for satisfaction, $F(1, 152) = 84.80$, $p < .001$; for protest intention, $F(1, 152) = 41.63$, $p < .001$. Evidence was also found for main effects of outcome, multivariate $F(4, 149) = 37.08$, $p < .001$; for procedural fairness, $F(1, 152) = 78.83$, $p < .001$; for distributive fairness, $F(1, 152) = 59.15$, $p < .001$; for satisfaction, $F(1, 152) = 91.53$, $p < .001$; for protest intention, $F(1, 152) = 41.10$, $p < .001$. More

Table 2
Means of the Dependent Variables by Accuracy of Procedure, Favorability of Outcome, and Order of Presentation (Experiment 2)

Dependent variable	Order: Procedure before outcome — Accurate procedure	Order: Procedure before outcome — Inaccurate procedure	Order: Outcome before procedure — Accurate procedure	Order: Outcome before procedure — Inaccurate procedure
Procedural fairness				
Favorable outcome	6.5_a	2.5_c	6.5_a	6.4_a
Unfavorable outcome	6.5_a	1.5_d	3.8_b	$2.1_{c,d}$
Distributive fairness				
Favorable outcome	5.1_a	3.5_b	5.2_a	5.2_a
Unfavorable outcome	5.2_a	1.6_d	3.8_b	2.6_c
Satisfaction				
Favorable outcome	5.9_a	3.5_b	5.8_a	5.7_a
Unfavorable outcome	5.7_a	1.9_c	3.4_b	2.0_c
Protest intention				
Favorable outcome	2.0_a	3.2_b	3.0_b	3.1_b
Unfavorable outcome	2.0_a	4.4_c	4.3_c	5.8_d

Note. Entries are means on 7-point Likert-type scales; higher values indicate more positive ratings of the dependent variable in question. For each dependent variable, means with no subscript in common differed at $p < .05$ in the Fisher least significant difference test.

important, however, these main effects were qualified by the interactions that were predicted by Hypothesis 1 to 3.

Procedure × Order interactions were revealed: Multivariate $F(4, 149) = 19.79$, $p < .001$; for procedural fairness, $F(1, 152) = 63.77$, $p < .001$; for distributive fairness, $F(1, 152) = 28.35$, $p < .001$; for satisfaction, $F(1, 152) = 31.59$, $p < .001$; for protest intention, $F(1, 152) = 6.58$, $p < .02$. In agreement with Hypothesis 1, the difference between the inaccurate and the accurate procedures was greater when procedure was presented first as opposed to when procedure was presented second. Procedure affected the dependent variables more strongly when procedure was presented first: Multivariate $F(4, 149) = 63.61$, $p < .001$, $\eta^2 = .63$; for procedural fairness, $F(1, 152) = 197.60$, $p < .001$, $\eta^2 = .57$; for distributive fairness, $F(1, 152) = 93.47$, $p < .001$, $\eta^2 = .38$; for satisfaction, $F(1, 152) = 109.95$, $p < .001$, $\eta^2 = .42$; for protest intention, $F(1, 152) = 40.65$, $p < .001$, $\eta^2 = .21$; than when procedure was presented second, multivariate $F(4, 149) = 3.57$, $p < .01$, $\eta^2 = .09$; for procedural fairness, $F(1, 152) = 7.64$, $p < .01$, $\eta^2 = .05$; for distributive fairness, $F(1, 152) = 4.57$, $p < .04$, $\eta^2 = .03$; for satisfaction, $F(1, 152) = 6.44$, $p < .02$, $\eta^2 = .04$; for protest intention, $F(1, 152) = 7.56$, $p < .01$, $\eta^2 = .05$.

Furthermore, Outcome × Order interactions were shown: multivariate $F(4, 149) = 14.15$, $p < .001$; for procedural fairness, $F(1, 152) = 44.16$, $p < .001$; for distributive fairness, $F(1, 152) = 8.75$, $p < .01$; for satisfaction, $F(1, 152) = 27.69$, $p < .001$; for protest intention, $F(1, 152) = 11.79$, $p < .01$. In agreement with Hypothesis 2, the difference between the favorable and the unfavorable outcomes was greater when outcome was presented first than when outcome was presented second. Outcome had a greater impact when it was presented first: Multivariate $F(4, 149) = 47.00$, $p < .001$, $\eta^2 = .56$; for procedural fairness, $F(1, 152) = 120.50$, $p < .001$, $\eta^2 = .44$; for distributive fairness, $F(1, 152) = 56.70$, $p < .001$, $\eta^2 = .27$; for satisfaction, $F(1, 152) = 109.95$, $p < .001$, $\eta^2 = .42$; for protest intention, $F(1, 152) = 48.45$, $p < .001$, $\eta^2 = .24$; than when it was presented second, multivariate $F(4, 149) = 4.23$, $p < .01$, $\eta^2 = .10$; for procedural fairness, $F(1, 152) = 2.49$, n.s., $\eta^2 = .02$; for distributive fairness, $F(1, 152) = 11.20$, $p < .01$, $\eta^2 = .07$; for satisfaction, $F(1, 152) = 9.27$, $p < .01$, $\eta^2 = .06$; for protest intention, $F(1, 152) = 4.43$, $p < .04$, $\eta^2 = .03$.

Evidence was also found for Procedure × Outcome interactions, multivariate $F(4, 149) = 6.84$, $p < .001$; for procedural fairness, $F(1, 152) = 8.76$, $p < .01$; for distributive fairness, $F(1, 152) = 18.26$, $p < .001$; for satisfaction, $F(1, 152) = 10.43$, $p < .01$; for protest intention, $F(1, 152) = 10.68$, $p < .01$. In line with Hypothesis 3, it was found that the outcome had a greater impact when the procedure was inaccurate than when the procedure was accurate and that the procedure had a greater impact when the outcome was unfavorable than when the outcome was favorable. The outcome affected the dependent variables more strongly when the procedure was inaccurate:

Table 3
Correlations Between the Dependent Variables in Experiment 2

Dependent variable	1	2	3	4
1. Procedural fairness	—			
2. Distributive fairness	.73	—		
3. Satisfaction	.73	.68	—	
4. Protest intention	−.57	−.49	−.61	—

Note. Entries are Pearson product-moment correlations. All correlations are significant at $p < .01$.

Multivariate $F(4, 149) = 36.63$, $p < .001$, $\eta^2 = .50$; for procedural fairness, $F(1, 152) = 70.08$, $p < .001$, $\eta^2 = .32$; for distributive fairness, $F(1, 152) = 71.57$, $p < .001$, $\eta^2 = .32$; for satisfaction, $F(1, 152) = 81.87$, $p < .001$, $\eta^2 = .35$; for protest intention, $F(1, 152) = 46.84$, $p < .001$, $\eta^2 = .24$; than when the procedure was accurate, multivariate $F(4, 149) = 7.29$, $p < .001$, $\eta^2 = .16$; for procedural fairness, $F(1, 152) = 17.52$, $p < .001$, $\eta^2 = .10$; for distributive fairness, $F(1, 152) = 5.84$, $p < .05$, $\eta^2 = .04$; for satisfaction, $F(1, 152) = 20.07$, $p < .001$, $\eta^2 = .12$; for protest intention, $F(1, 152) = 4.94$, $p < .05$, $\eta^2 = .03$. The procedure affected the dependent variables more strongly when the outcome was unfavorable: Multivariate $F(4, 149) = 42.78$, $p < .001$, $\eta^2 = .53$; for procedural fairness, $F(1, 152) = 110.32$, $p < .001$, $\eta^2 = .42$; for distributive fairness, $F(1, 152) = 79.65$, $p < .001$, $\eta^2 = .34$; for satisfaction, $F(1, 152) = 77.34$, $p < .001$, $\eta^2 = .34$; for protest intention, $F(1, 152) = 47.24$, $p < .001$, $\eta^2 = .24$; than when the outcome was favorable, multivariate $F(4, 149) = 11.46$, $p < .001$, $\eta^2 = .24$; for procedural fairness, $F(1, 152) = 39.91$, $p < .001$, $\eta^2 = .21$; for distributive fairness, $F(1, 152) = 8.31$, $p < .01$, $\eta^2 = .05$; for satisfaction, $F(1, 152) = 17.88$, $p < .001$, $\eta^2 = .11$; for protest intention, $F(1, 152) = 5.07$, $p < .05$, $\eta^2 = .03$.

Discussion

Taken together, the findings of the two experiments show that the order in which information about procedures and outcomes is received plays a crucial role in what people consider to be fair and that this can be found when people judge the fairness of a hypothetical procedure and outcome (Experiment 1) as well as when they directly experience the fairness of a procedure and an outcome (Experiment 2). Moreover, the findings of both experiments strongly suggest that what people judge to be fair depends more on what information is available first than on what information is available next.

Findings of Experiment 2 also show that perceived justice is important for the understanding of social behavior in general. That is, in the conditions where participants received procedure information before outcome information, findings of Experiment 2 suggest that procedural justice affected participants' satisfaction and intention to protest. Thus, evidence has been found for a *fair process effect,* which has been defined as the positive influence of procedural justice on subsequent evaluations and behavioral reactions (Lind & Early, 1992; cf. Folger, Rosenfield, Grove, & Corkran, 1979). Furthermore, in the conditions where participants were informed about the outcome before they were informed about the procedure, findings indicate that distributive justice affected how satisfied participants were and how much they were inclined to show protest behavior. In other words, evidence has been found for a *fair outcome effect,* which we define as the positive influence of distributive justice on subsequent evaluations and behavior.

General Discussion

The present study falls in a category of recent papers (e.g., Brockner & Wiesenfeld, 1996; Cropanzano & Folger, 1989; Folger, 1984; Greenberg, 1990; Sweeney & McFarlin, 1993) that proposed an integration of different perspectives held by procedural justice researchers (cf. Lind & Tyler, 1988) and distributive justice researchers (e.g., Lerner & Whitehead, 1980; Rutte & Messick, 1995). Our analysis of Lind's fairness heuristic theory (Lind, 1992, 1994; Lind et al., 1993) sheds light on how these two perspectives may be integrated. Concerns of procedural justice may be more important when people are informed about the procedure first than when they are informed about the procedure second, and concerns about distributive justice may be more important when people know about the outcome earlier as opposed to when they know about the outcome later. Thus, the findings of the two experiments provide substantial support for our argument that whether a procedure or an outcome is judged to be more fair depends more on what information comes first than on what information comes next. In other words, by emphasizing when and with what information fairness judgments are formed, the present article suggests a new way of perceiving procedural and distributive justice (see Brockner & Wiesenfeld, 1996, for an overview of the existing literature).

The only research on fairness heuristic theory conducted thus far is the Lind et al. (1993) survey, in which correlational data were collected and subjected to structural equation analyses. In comparison with Lind et al. (1993), the present experiments provide more direct evidence of the reasoning proposed by fairness heuristic theory. Furthermore, our findings show that the psychological process delineated in fairness heuristic theory's explanation of how fairness judgments are formed may also apply to situations in which people attach importance to distributive justice. In our view, therefore, the present article does more than provide evidence for fairness heuristic theory; it also suggests that fairness heuristic theory is not a theory about procedural justice only, but a theory about distributive justice as well and, hence, a theory about justice in general.

Fairness heuristic theory may also provide a new perspective on other justice-related issues. For example, recently, we (Van den Bos, Vermunt, & Wilke, 1996) varied whether participants explicitly expected an opportunity to voice their opinion or explicitly expected no such opportunity and whether they received voice or no voice. In this way, two procedural rules were manipulated (see Leventhal, 1980): the *consistency-over-time rule* (dictating that once people expect a certain procedure, deviation from the expected procedure will lead to a reduction in procedural fairness) and the *voice effect* (which holds that receiving no opportunity to voice one's opinion will lead to lower procedural fairness judgments than receiving voice). In accordance with fairness heuristic theory's reasoning, it was found that the frame of reference that was available first (i.e., the consistency-over-time rule) affected participants' procedural fairness judgments more strongly than the frame of reference that became available next (i.e., the voice effect). The findings of both Van den Bos et al. (1996) and the present study suggest that earlier frames of reference (e.g., the consistency-over-time rule, the procedure that is followed, or the outcome that is received) will affect people's fairness judgments more strongly than later frames of reference.

Note here, however, that the present article, as well as Van den Bos et al. (1996), do not provide a narrow test of fairness heuristic theory. Instead, these two articles show a confirmation of a pattern of effects of some importance, which happens to

have been predicted by fairness heuristic theory, but these patterns have implications that hold, whether or not fairness heuristic theory holds up in the long run. Other theories may be worthwhile to pursue in future studies. Most notably, Kahneman and Miller's (1986) norm theory may yield insights in the psychology of justice judgments that may not be revealed by fairness heuristic theory (see also Boles & Messick, 1990). More generally, our understanding of procedural and distributive justice may profit from a greater knowledge of the psychological processes involved in fairness judgments. Remember that on the basis of several major papers on social justice (Brockner & Wiesenfeld, 1996; Cohen, 1982; Lind & Lissak, 1985; Utne & Kidd, 1980) as well as a diverse body of research—such as research on attributions (Weiner, 1985); person evaluations (Peeters & Czapinski, 1990); persuasion (Eagly & Chaiken, 1993; Petty & Cacioppo, 1986); and counterfactuals (Gleicher et al., 1990; Kahneman & Miller, 1986)—we reasoned that (in comparison with a desirable procedure or a favorable outcome) an undesirable procedure and an unfavorable outcome may act more as a negative or unexpected event, hence, might stimulate cognitive processing more, and that, therefore, information that becomes subsequently known will affect fairness judgments more strongly. We would like to propose here that an interesting implication of this hypothesized psychological process has to do with the fact that evidence for enhanced cognitive activity may be found on a variety of measures of cognitive processing (see Taylor & Fiske, 1981, for an overview)—measures developed in the domain of cognitive social psychology. For instance, individuals who receive negative or unexpected justice information might take longer to read the information, might list more thoughts about the information, and might have better memory of the information. This suggests that social justice research may profit from measurement methods commonly used in cognitive social psychology: By means of those methods, how people think about social justice issues may be delineated more precisely.

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Received February 8, 1996
Revision received May 21, 1996
Accepted May 21, 1996 ■