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# Uncertainty Management: The Influence of Uncertainty Salience on Reactions to Perceived Procedural Fairness

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On the basis of fairness heuristic theory, it is argued in this article that people especially need fairness when they are reminded about aspects of their lives that make them uncertain. It is therefore proposed that thinking about uncertainty should make fairness a more important issue to people. The findings of 3 experiments support this line of reasoning: Asking (vs. not asking) participants 2 questions that solicited their thoughts and feelings of being uncertain led to stronger effects of perceived procedural fairness on participants' affective reactions toward the way they were treated. It is argued that these findings suggest that fairness matters to people especially when they are trying to deal with things that make them uncertain. An implication of the current findings therefore may be that fairness is important to people because it gives them an opportunity to manage uncertain aspects of their lives.

The norms and values of fairness and justice constitute a fundamental feature of human life. It is not surprising, therefore, that the issue of justice has received considerable attention from philosophers, sociologists, political scientists, legal scholars, economists, and psychologists, among others. Social psychologists have shown convincingly that when people feel they have experienced fair or unfair events it may strongly affect their subsequent reactions (see, e.g., Brockner & Wiesenfeld, 1996; Folger & Cropanzano, 1998; Lind & Tyler, 1988; Tyler & Lind, 1992). This finding suggests that perceived fairness plays a crucial role in social behavior. Folger (1984) has even noted that "the importance of justice cannot be overstated" (p. ix). It is therefore important to explore why fairness matters (Tyler, 1990, 1997). In the current article, I focus on this significant question.

An illustration of the effects that perceived fairness can have on people's subsequent reactions can be found in experimental studies in which researchers manipulate whether participants are or are not allowed an opportunity to voice their opinion about decisions to be made (e.g., Folger, Rosenfield, Grove, & Corkran, 1979; Van den Bos, Lind, Vermunt, & Wilke, 1997). These experiments generally reveal that people judge a voice procedure to be more fair than a no-voice procedure. More important, findings frequently show fair process effects. For example, it has been revealed that people who are allowed voice show less resentment than do those who are not allowed a voice (for overviews, see, e.g., Folger & Cropanzano, 1998; Lind & Tyler, 1988).

An alternative way to study people's reactions to perceived procedural fairness is reported in Van den Bos and Miedema

(2000, Experiment 3; cf. Van den Bos, Vermunt, & Wilke, 1997, Experiment 1). Participants in this experiment were asked to imagine that they applied for a job and that the selection process for this job consisted of nine parts. Participants then learned that the procedures used to make the decision entailed the use of information that was highly accurate (all parts were graded) or not so accurate (only one part was graded). As expected, the accurate procedure was judged to be more fair than the inaccurate procedure. The fair process effect that was studied in that experiment was under what conditions participants' affect ratings would be less negative following the accurate as opposed to the inaccurate procedure.

Several reviews of the literature have suggested that to understand the frequently replicated effects of perceived procedural fairness on people's reactions, researchers have to carefully study the psychological mechanisms underlying these effects (see, e.g., Folger & Cropanzano, 1998; Lind & Tyler, 1988; Tyler & Lind, 1992). In this article, I try to do this. In doing so, I focus on the question why fairness—and particularly procedural fairness—matters to people (cf. Tyler, 1990, 1997). To achieve this aim, I expand on insights developed within fairness heuristic theory. Compared with previous explanations, the analysis of the psychology of people's reactions to perceived procedural fairness that are put forward in the present article may yield an as yet unidentified and unexplored explanation of these reactions (for an overview of other explanations, see Greenberg & Folger, 1983; Lind & Tyler, 1988; Van den Bos, Lind, et al., 1997; Van den Bos & Miedema, 2000; Van den Bos, Vermunt, & Wilke, 1997; Van den Bos, Wilke, Lind, & Vermunt, 1998). After introducing fairness heuristic theory, I present the aims of the current research.

## Fairness Heuristic Theory

Fairness heuristic theory makes a number of novel predictions about the social psychology of justice and fairness (for overviews, see Lind, Kulik, Ambrose, & De Vera Park, 1993; Van den Bos, 1999; Van den Bos, Lind, et al., 1997; Van den Bos, Vermunt, & Wilke, 1997; Van den Bos, Wilke, & Lind, 1998; Van den Bos,

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Wilke, Lind, & Vermunt, 1998). Although an elaborate overview of the theory is beyond the scope of this article (for more complete descriptions, see, e.g., Lind, *in press*; Van den Bos, 2001; Van den Bos, Lind, & Wilke, 2001) it is worthwhile to note here that this theory suggests that people may process fairness-related information by relying on heuristics. For example, it has been argued that fairness information may be used as a heuristic substitute to decide whether or not an authority can be trusted (Van den Bos, Wilke, & Lind, 1998) and that once an individual has established a fairness judgment—whether it is based on procedure or outcome fairness—perceived fairness serves as a heuristic that guides the interpretation of subsequent events (Van den Bos, Vermunt, & Wilke, 1997).

Most important for the current purposes, fairness heuristic theory tries to provide an answer to the question of why fairness is important for people. Answering this question is of crucial importance for any theory about justice, and therefore I focus on this question in the present article. Furthermore, I argue here that an important, yet thus far hidden, assumption in fairness heuristic theory has been that human uncertainty plays a crucial role in the fairness judgments process. I try to illustrate this by discussing two earlier fairness heuristic studies: Van den Bos, Wilke, and Lind (1998) and Van den Bos and Miedema (2000).

In Van den Bos, Wilke, and Lind (1998), it was proposed that people especially need fairness judgments when they are concerned about potential problems associated with social interdependence and socially based identity processes. These problems are related to whether one can trust others not to exploit or exclude one from important relationships and groups (cf. Lind & Tyler, 1988; Tyler & Lind, 1992). An important subgroup of social relations are authority processes. On the basis of the work by Tyler and Lind (1992), fairness heuristic theory argues that, because ceding authority to another person raises the possibility of exploitation and exclusion, people frequently feel uneasy about their relationship with authorities.

In the Van den Bos, Wilke, and Lind (1998) article, it was argued that this implies that people want to have information about whether they can trust the authority. Furthermore, it was proposed that when information about whether an authority can be trusted is not available, people will resolve the question of how they should interpret the decisions of the authority by relying on perceived fairness. As a consequence, people who do not have information about the authority's trustworthiness will react more positively toward the outcomes of the authority's decisions if the authority is using fair as opposed to unfair procedures. However, when people know that the authority either can or cannot be trusted they are less in need of procedural fairness information, yielding less strong effects of procedural fairness on people's reactions. The findings of two experiments support this line of reasoning.

The Van den Bos, Wilke, and Lind (1998) findings are important because they suggest that an answer to the question of why people care about fairness may be found by pointing out that people are especially in need of fairness information when they do not have direct, explicit information regarding whether they can trust authorities. Fairness matters less when people are certain that the authority can or cannot be trusted. Other fairness heuristic studies have shown that when most relevant fairness information (e.g., information about distributive justice) provides a weak reference point (Van den Bos, Wilke,

Lind, & Vermunt, 1998) or is missing (Van den Bos, Lind, et al., 1997) people rely more on other fairness principles (e.g., procedural fairness) to assess how to respond to the situation at hand than when the most relevant fairness information provides a strong reference point and is available (see also Skitka, 1998; Van den Bos, 1999).

In their study, Van den Bos and Miedema (2000) proposed that what the above-mentioned studies have in common is that they all focus on the role of fairness in giving people information as to the extent to which they can be certain about important issues. More specifically, the previous studies have focused on the cognitive process whereby people need fairness less when they have been made more certain—relative to, for example, at the beginning of an experiment—about authorities' trustworthiness (both positive and negative trust; see Van den Bos, Wilke, & Lind, 1998), distributive issues (see Van den Bos, Lind, et al., 1997; Van den Bos, Wilke, Lind, & Vermunt, 1998; cf. Skitka, 1998), or procedural issues (see Van den Bos, 1999).

Following these previous studies, Van den Bos and Miedema (2000) argued that people especially need fairness when they are reminded about aspects of their lives that make them uncertain. That is, on the basis of terror management theory (for overviews, see Greenberg, Solomon, & Pyszczynski, 1997; Pyszczynski, Greenberg, & Solomon, 1999; Solomon, Greenberg, & Pyszczynski, 1991), it was proposed that thinking about their mortality should make fairness a more important issue to people. The findings of three experiments supported this line of reasoning: Asking (vs. not asking) participants to respond to two questions concerning their thoughts and feelings about their death ("Please briefly describe the emotions that the thought of your death arouses in you" and "Please write down, as specifically as you can, what you think will happen to you as you physically die") led to stronger fair process effects on participants' affective reactions to the way they were treated (for details, see Van den Bos & Miedema, 2000).

### The Current Research

In the current article, I extend the line of reasoning of Van den Bos and Miedema (2000) by focusing explicitly on human uncertainty as a main cause of people's reactions to perceived justice. That is, Van den Bos and Miedema argued that their results suggest that when people are reminded about aspects of their lives that make them feel uncertain they will react more strongly to variations in justice. An interesting and potentially important implication of this may be that fairness especially matters to people when issues related to people's uncertainties have been made salient. However, it should be noted here that the findings by Van den Bos and Miedema showed mortality salience to be a moderator of fair process effects, but did not present any direct evidence about the importance of uncertainty salience for people's reactions to perceived fairness. This lack of direct evidence regarding uncertainty is unfortunate given the potential value of the concept for the psychology of social justice. In the current article, three experiments are presented. Each experiment focuses on uncertainty salience as an important determinant of people's reactions to perceived fairness.

To obtain direct evidence that uncertainty affects people's reactions to perceived fairness, I asked participants in the uncertainty salient conditions of the experiments presented here two questions that solicited their thoughts and feelings of being uncertain. Participants in the nonsalient condition were asked two questions that did not remind them about their uncertainties. On the basis of the above-presented line of reasoning, I predicted that participants' reactions would be affected more strongly by perceived fairness in the uncertainty-salient conditions than in the nonsalient conditions.

### Experiment 1

In all three experiments to be presented here, uncertainty salience was manipulated before a procedural justice manipulation. The uncertainty-salient condition of Experiment 1 was induced by asking participants two questions that solicited their thoughts and feelings of being uncertain. Participants in the nonsalient condition were asked two questions that were similar in format and that did not remind participants about their uncertainties. After the manipulation of uncertainty salience, the procedural justice manipulation was induced. The procedural justice manipulation of Experiment 1 consisted of the most generally accepted and best-documented manipulation in procedural justice experiments: Participants received or did not receive an opportunity to voice their opinion about a decision (cf. Van den Bos, Lind, et al., 1997; Van den Bos & Miedema, 2000, Experiments 1 and 2).

Because it is important to measure people's affective reactions to perceived fairness (Tyler & Smith, 1998; Weiss, Suckow, & Cropanzano, 1999), and following previous justice research (e.g., Folger et al., 1979; Van den Bos & Spruijt, in press; Van den Bos & Van Prooijen, in press), main dependent variables in all experiments reported here were participants' affective reactions toward the way they were treated (cf. Van den Bos & Miedema, 2000). Because findings of Van den Bos and Miedema (2000, Experiment 3) revealed that stronger effects would be found on participants' negative-affect reactions, and because it is important to assess negative reactions following perceived fairness (Folger & Cropanzano, 1998; Folger et al., 1979), main dependent variables in Experiment 1 were negative-affect reactions toward treatment.

### Method

*Participants and design.* Seventy-seven students (20 men and 57 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 (uncertainty salience: salient vs. nonsalient)  $\times$  2 (procedure: voice vs. no voice) factorial design. Nineteen to 20 participants took part in each of the four conditions.

*Experimental procedure.* Students at Leiden University were invited to the laboratory 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. Next to the monitor, participants found pieces of paper and a pencil. 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 dependent variables and the manipulation checks. Participants participated in the experiment and answered the questions that constituted the dependent variables and the

manipulation checks before participating in another, unrelated study. The studies lasted a total of 105 min, and participants were paid 17.50 Dutch guilders for their participation (1 Dutch guilder equaled approximately \$0.50 U.S. at the time the studies in this article were conducted).

In the first part of the instructions, participants were informed that they participated in the study with another person, referred to as *Other*. The experimental procedure was then outlined to the participants: After the experimental tasks were explained, participants would practice the tasks for 2 min, after which time they would work on the tasks for 10 min. Furthermore, participants were informed that, after all participants were run through the experiment, a lottery would be held among all participants. The winner of this lottery would receive 100 Dutch guilders. (Actually, after all participants had completed the experiment, the 100 Dutch guilders were randomly given to one participant; a procedure to which none of the participants objected on debriefing.) Participants were told that a total of 200 lottery tickets would be divided among all participants. Furthermore, participants were told that after the work round the experimenter would divide some lottery tickets between them and *Other*. Seven practice questions were posed to ensure comprehension of the lottery. If participants gave a wrong answer to a question, the correct answer was disclosed and main characteristics of the lottery were repeated.

The task was then explained to the participants. Figures were presented on the upper right part of the computer screen. Each figure consisted of 36 squares, and each square showed one of eight distinct patterns. On the upper left side of the computer screen, one of the eight patterns was presented, and participants had to count the number of squares with this pattern in the figure on the right side of the screen. When participants had indicated the correct number of patterns in the figure on the right side of the screen, another figure and another pattern would be presented on the screen. In both the practice and the work rounds, the number of tasks that the participant had completed (i.e., the number of figures that the participant had counted) in the present round would be presented on the lower right side of the screen. On the lower left side of the screen, the time remaining in the present round was shown.

The practice round then began, after which the work round began. After the work round had ended, participants were told how many tasks they had completed in the work round, and—to ensure that participants compared themselves with *Other*—it was communicated to the participant that *Other* had completed an equivalent number of tasks. 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, Lind, et al., 1997), the experimenter asked them to what extent *Other* had performed well in the work round relative to the performance of the participant self (1 = *much worse*, 4 = *equally*, 7 = *much better*) and to what extent *Other* was good in performing the tasks in the work round relative to the participant self (1 = *much worse*, 4 = *equally*, 7 = *much better*). After this, participants were asked to think for 1 min about the percentage of lottery tickets that they should receive relative to *Other*.

Following Van den Bos and Miedema (2000, Experiments 1 and 2), participants were then told that before the experimenter would divide the lottery tickets between them and *Other*, they would be asked to complete a number of questions, and that after they had completed these questions, the study would continue. Uncertainty salience was then manipulated. Extending on Van den Bos and Miedema (2000), I induced the uncertainty-salient condition by having participants respond to two open-ended questions concerning their thoughts and feelings about being uncertain. More specifically, participants were asked to write down on a piece of paper next to the computer their answers to the questions (a) "Please briefly describe the emotions that the thought of your being uncertain arouses in you" and (b) "Please write down, as specifically as you can, what you think physically will happen to you as you feel uncertain." Participants in the nonsalient condition were asked two questions that were similar in format and

that did not remind them about their uncertainties.<sup>1</sup> These participants were asked to write down on a piece of paper next to the computer their answers to the questions (a) "Please briefly describe the emotions that the thought of your watching TV arouses in you" and (b) "Please write down, as specifically as you can, what you think physically will happen to you as you watch TV."

After this, all participants completed the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988), on which they reported on 20 items how they felt at the moment. Following Van den Bos and Miedema (2000), I included the PANAS as a filler task and a way to determine if the manipulation of uncertainty salience engendered positive and negative affect. The PANAS consists of two 10-item subsets (Watson et al., 1988), one measuring positive affect (PA) and one measuring negative affect (NA), and both subsets were averaged to form reliable scales ( $\alpha = .81$  and  $.87$ , respectively). After they had completed the PANAS, all participants were told that by pushing the return button on the keyboard the study would continue.

The procedure was then manipulated. In the voice condition, the experimenter allegedly asked participants, by means of the computer network, to type in their opinion about the percentage of tickets that they should receive relative to Other. (In reality, however, all stimulus information was preprogrammed.) Participants in the no-voice condition were informed that they would not be asked to type their opinion about the percentage of tickets that they should receive relative to Other.

After this, participants were asked questions pertaining to the dependent variables and manipulation checks. All ratings were made on 7-point scales. Following previous justice experiments (e.g., Van den Bos & Miedema, 2000; Van den Bos & Spruijt, in press; Van den Bos & Van Prooijen, in press), main dependent variables were participants' negative-affect reactions toward the way they were treated, which were assessed in Experiment 1 by asking participants how disappointed (1 = *not at all disappointed*, 7 = *very disappointed*) and sad (1 = *not at all sad*, 7 = *very sad*) they felt about the way they were treated. These ratings were averaged to form a reliable scale of negative-affect reactions toward treatment ( $\alpha = .82$ ).

Following previous justice studies, the manipulation of procedure was checked by asking participants to what extent they agreed with the statement that they had been given an opportunity to voice their opinion about the percentage of tickets that they should receive relative to Other (1 = *strongly disagree*, 7 = *strongly agree*) and to what extent they agreed with the statement that they had not been given an opportunity to voice their opinion about the percentage of tickets that they should receive relative to Other (1 = *strongly disagree*, 7 = *strongly agree*). (Following previous work on terror management [for overviews, see Greenberg et al., 1997; Pyszczynski et al., 1999; Solomon et al., 1991], the manipulation of uncertainty salience was not checked explicitly, but two judges coded whether the responses that participants wrote down during the induction of uncertainty salience showed that they had been thinking about their being uncertain—see the results of participants' uncertainty responses in the *Results* section; see also Footnote 1.) To further validate the manipulation of procedure, participants' procedural justice judgments were solicited by asking participants how fair (1 = *very unfair*, 7 = *very fair*) and justified (1 = *very unjustified*, 7 = *very justified*) they considered the way in which they had been treated. When the participants had answered these questions, and had completed the other experiments in which they participated, they were thoroughly debriefed and paid for their participation.

## Results

**Manipulation checks.** A two-way multivariate analysis of variance (MANOVA) on the two manipulation checks of procedure (the voice check and the no-voice check) yielded only a main effect of procedure at both the multivariate and univariate levels: multivariate  $F(2, 72) = 347.79, p < .001$ ; for the voice check,  $F(1,$

$73) = 472.06, p < .001$ ; for the no-voice check,  $F(1, 73) = 556.37, p < .001$ . Participants in the voice condition agreed more with the statement that they received an opportunity to voice their opinion ( $M = 6.2, SD = 1.1$ ) than did participants in the no-voice condition ( $M = 1.4, SD = 0.7$ ). Participants in the no-voice condition agreed more with the statement that they did not receive an opportunity to voice their opinion ( $M = 6.4, SD = 1.2$ ) than did participants in the voice condition ( $M = 1.5, SD = 0.6$ ). This suggests that the procedure was successfully operationalized.

Similarly, participants' procedural justice judgments (procedural fairness and justification) yielded a main effect of procedure only at the multivariate level and the univariate levels: multivariate  $F(2, 72) = 14.68, p < .001$ ; for procedural fairness judgments,  $F(1, 73) = 25.15, p < .001$ ; for procedural justification judgments,  $F(1, 73) = 27.35, p < .001$ . As expected, participants who had received an opportunity to voice their opinion judged the procedure to be more fair ( $M = 5.2, SD = 1.7$ ) and justified ( $M = 4.8, SD = 1.5$ ) than did participants who did not receive such an opportunity ( $M_s = 3.3$  and  $3.1, SD_s = 1.5$  and  $1.5$ , respectively). This shows that the manipulation of procedure was successful in affecting the relative strength of participants' procedural justice judgments in ways that were intended with this manipulation.

**Uncertainty responses.** Two judges coded whether the responses that participants wrote down during the induction of uncertainty salience showed that they had been thinking about being uncertain. As expected, the two judges indicated independently of each other that what participants wrote down showed that participants in the uncertainty-salient condition had been thinking of their being uncertain, whereas those in the nonsalient condition had not. This suggests that uncertainty salience was successfully operationalized.

In the uncertainty-salient condition, participants were asked to write down their responses when they thought of being uncertain. To assess whether this led participants to think about death-related issues, the two judges coded whether the answers that participants wrote down in both salience conditions had anything to do with death. Independent of each other, the judges indicated that only one of the answers that one participant had written down was related to death. Temporarily removing this participant from the data set did not affect any of the results of Experiment 1.<sup>2</sup> Furthermore, the judges agreed that all answers of all other participants had nothing to do with death but with uncertainty. Thus, as expected, death-related thoughts cannot explain the findings reported here.

**PANAS findings.** Following Van den Bos and Miedema (2000), the PANAS was administered immediately following the uncertainty-salience manipulation, which served primarily as a filler task and

<sup>1</sup> As expected, two judges indicated independently of each other that the responses participants wrote down in the nonsalient conditions of the experiments reported here had nothing to do with uncertainty, mortality, and being out of control.

<sup>2</sup> For example, after temporarily removing the participant from the data set, dependent variables still yielded a main effect of procedure,  $F(1, 72) = 20.61, p < .001$ , and an interaction effect between uncertainty salience and procedure,  $F(1, 72) = 5.80, p < .02$ , showing that the effect of procedure was stronger in the salient condition,  $F(1, 72) = 23.88, p < .001$ , than in the nonsalient condition,  $F(1, 72) = 2.28, ns$ .

also as a means to find out whether unintended effects of uncertainty salience on the positive and negative subsets could be found. It was checked whether mortality salience affected the positive and negative subsets in Experiment 1: A two-way MANOVA on the Positive Affect and Negative Affect scales yielded an unexpected multivariate effect of uncertainty salience,  $F(2, 72) = 3.87, p < .03$ , an effect that was caused by a univariate effect on the Positive Affect scale,  $F(1, 73) = 5.83, p < .02$ , indicating that judgments on the Positive Affect scale were more positive in the uncertainty-salient condition ( $M = 3.1, SD = 0.6$ ) than in the nonsalient condition ( $M = 2.8, SD = 0.5$ ). It is important to note here that this unexpected effect was rather weak ( $\eta^2 = .07$ ) and that controlling for the PANAS scales did not affect any of the results of Experiment 1.<sup>3</sup> Furthermore, no effects of the independent variables on the Negative Affect scale were found (all  $ps > .22, M = 1.4, SD = 0.5$ ). Moreover, uncertainty salience had no effects on the PANAS scales in Experiments 2 and 3. This shows that affect cannot explain the findings reported in this article.

*Comparability measures.* As expected, participants' comparability judgments yielded no significant effects at either the multivariate level or the univariate levels. Participants indicated that the other participant had performed equally well in the work round ( $M = 4.0, SD = 0.4$ ), and was equally good in performing the tasks ( $M = 4.0, SD = 0.3$ ). Thus, participants thought of the other person as a comparable person with respect to the tasks that were completed in the experiment.

*Percentage findings.* Participants who were allowed voice ( $n = 39$ ) typed in their opinion about the percentage of tickets that they should receive relative to the other participant. An analysis of variance (ANOVA) yielded no significant effect of uncertainty salience. Inspection of the means indicated that participants typed in that the lottery tickets should be divided equally between themselves and the other participant: Thirty-seven of the participants answered that they should get 50% of the tickets, and the mean percentage ( $M = 52.6\%, SD = 11.2$ ) did not differ significantly from 50%. These findings are supportive of equity theory: Participants preferred to divide outcomes equally between themselves and the other participant (who contributed an equal amount of inputs, and who hence deserved—according to equity theory—to receive the same amount of outputs as the participants themselves).

*Dependent variables.* Main dependent variables were participants' negative-affect reactions toward the way they were treated; these reactions were assessed after both uncertainty salience and procedure had been induced. The means and standard deviations of the negative affect scale are displayed in Table 1. As expected, the negative affect scale yielded only a main effect of procedure,  $F(1, 73) = 21.76, p < .001$ , and an interaction effect,  $F(1, 73) = 6.29, p < .02$ . The main effect of procedure indicated that participants' affect ratings were less negative when they received an opportunity to voice their opinion than when they did not receive such an opportunity. More interesting, the interaction effect showed that this procedure effect was stronger in the uncertainty-salient condition,  $F(1, 73) = 25.92, p < .001$ , than in the nonsalient condition,  $F(1, 73) = 2.30, ns$ .

Additionally, it can be noted here that uncertainty salience had a significant effect on the negative affect scale within the no-voice-procedure conditions,  $F(1, 73) = 5.32, p < .03$ , but not

Table 1  
*Means and Standard Deviations of Negative-Affect Reactions Toward Treatment as a Function of Uncertainty Salience and Procedure (Experiment 1)*

Procedure	Uncertainty salience			
	Salient		Nonsalient	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Voice	1.8	1.0	2.2	1.4
No voice	3.8	1.3	2.8	1.2

*Note.* Means are on 7-point scales, with higher values indicating more negative-affect reactions toward treatment.

within the voice-procedure conditions,  $F(1, 73) = 1.74, ns$ . I return to this in the General Discussion.

## Discussion

The reported findings are supportive for the line of reasoning presented here. That is, as expected, findings indicate that people's negative-affect reactions toward treatment are more strongly influenced by variations in justice (viz., voice vs. no-voice procedures) when they have been thinking about being uncertain than when they have not been thinking about uncertainty. Thus, in line with predictions, the findings of Experiment 1 reveal that asking people to think of their uncertainty leads to stronger fair process effects on negative-affect reactions toward the way they were treated. In this way, the findings of Experiment 1 provide supportive evidence for my line of reasoning that uncertainty salience influences reactions to perceived fairness. Before we draw strong conclusions on the basis of these results, however, it is important to replicate them in a second experiment.

## Experiment 2

To get an indication of the robustness of the effects reported in Experiment 1, I decided to make a strongly related yet somewhat different aspect of human uncertainty salient in Experiment 2: Because loss of control is an important aspect of human uncertainty (cf. Martin, 1999), in Experiment 2, I manipulated whether participants were asked to think of being in situations that are out of control. Participants in the salient condition of Experiment 2 were asked to write down their responses to their being in situations that are not controllable anymore. The nonsalient condition was the same as in Experiment 1. Following the line of reasoning of the current article, I predicted that participants' negative-affect reactions would be affected more by variations in procedural justice in the salient than in the nonsalient conditions.

<sup>3</sup> For instance, after controlling for participants' scores on the PANAS scales in an analysis of covariance, dependent variables in Experiment 1 still yielded a main effect of procedure,  $F(1, 71) = 20.98, p < .001$ , and an interaction effect between uncertainty salience and procedure,  $F(1, 71) = 6.33, p < .02$ , showing that the effect of procedure was stronger in the salient condition,  $F(1, 71) = 24.58, p < .001$ , than in the nonsalient condition,  $F(1, 71) = 2.24, ns$ .

There are a number of alternative ways to manipulate variations in procedural justice, and therefore I decided to use another procedural justice manipulation in Experiment 2: Participants were confronted with either an accurate or an inaccurate procedure (cf. Van den Bos & Miedema, 2000, Experiment 3; Van den Bos, Vermunt, & Wilke, 1997). An additional aim of Experiment 2 was to use a less disruptive experimental procedure than in Experiment 1. That is, in Experiment 1, participants received instructions, completed task rounds, and answered some questions about the other participant. After this, the experiment was stopped, and the salience manipulation was induced and the PANAS was administered. After participants had completed the PANAS, the experiment continued. In Experiment 2, I decided to use a nondisruptive method: In the first part of the experiment, I manipulated out-of-control salience and asked participants to complete the PANAS. In the second part of the experiment, participants received the stimulus materials and manipulation of procedure used in Van den Bos and Miedema (2000, Experiment 3).

To have confidence in the findings reported here, I used a different operationalization of participants' negative-affect reactions toward treatment in Experiment 2. This was important because if similar results emerged across operationalizations this would help to establish the robustness and generalizability of the findings. I return to this in the introduction of Experiment 3.

## Method

*Participants and design.* Ninety-six students (36 men and 60 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 (out-of-control salience: salient vs. nonsalient)  $\times$  2 (procedure: accurate vs. inaccurate) factorial design. Twenty-four participants took part in each of the four conditions.

*Experimental procedure.* The experimental procedure was the same as in Experiment 1, except for the points mentioned below. Participants took part in the experiment after and before participating in other, unrelated experiments. The experiments lasted a total of 105 min, and participants were paid 20 Dutch guilders for their participation.

The experiment was presented to the participants as two separate studies. In the first study, out-of-control salience was manipulated. The salient condition was induced by asking participants to write down on a piece of paper next to the computer their answers to the questions (a) "Please briefly describe the emotions that the thought of you being in a situation which is not controllable anymore arouses in you" and (b) "Please write down, as specifically as you can, what you think physically will happen to you when you are in a situation that is not under control anymore." The nonsalient condition was the same as in Experiment 1. After the out-of-control salience manipulation, participants answered the PANAS items. This yielded reliable positive and negative subsets ( $\alpha$ s = .78 and .79, respectively).

After this, the second study started. In this study, 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 procedure. Participants read the following sentence (manipulated information in brackets): "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 [were/was] graded."

After this, the dependent variables were solicited. Main dependent variables again were participants' negative-affect reactions toward treatment, which were assessed in Experiment 2 by asking participants how angry (1 = *not at all angry*, 7 = *very angry*), hostile (1 = *not at all hostile*, 7 = *very hostile*), furious (1 = *not at all furious*, 7 = *very furious*), and infuriated (1 = *not at all infuriated*, 7 = *very infuriated*) they felt about the way they were treated. These ratings were averaged to form a reliable measure of negative affect ( $\alpha$  = .74). Finally, the same procedural justice judgments (procedural fairness and justification judgments) as in Experiment 1 were measured.

## Results

*Procedural justice judgments.* As in Experiment 1, participants' procedural justice judgments (procedural fairness and justification) yielded only a main effect of procedure at both the multivariate level and the univariate levels: multivariate  $F(2, 91) = 60.46$ ,  $p < .001$ ; for procedural fairness judgments,  $F(1, 92) = 118.65$ ,  $p < .001$ ; for procedural justification judgments,  $F(1, 92) = 70.61$ ,  $p < .001$ . As expected, participants in the accurate procedure condition judged the procedure to be more fair ( $M = 5.0$ ,  $SD = 1.3$ ) and justified ( $M = 4.8$ ,  $SD = 1.2$ ) than did participants in the inaccurate procedure condition ( $M$ s = 2.3 and 2.5,  $SD$ s = 1.1 and 1.3, respectively). This shows that the manipulation of procedure was successful in affecting the relative strength of participants' procedural justice judgments in ways that were intended with this manipulation.

*Out-of-control responses.* Two judges coded whether the answers that participants wrote down showed that they had been thinking about being in situations that were out of control. As expected, the two judges indicated independently of each other that what participants wrote down showed that participants in the salient condition had been thinking of being in situations that were out of control, whereas those in the nonsalient condition had not. This suggests that out-of-control salience was successfully operationalized.

In the out-of-control salient condition, participants were asked to write down their responses when they thought of being in situations that were out of control. To assess whether this led participants to think about death-related issues, the two judges coded whether the answers that participants wrote down in both salience conditions had anything to do with death. Independently of each other, the judges agreed that all answers had nothing to do with death but with being in out-of-control situations. This shows that death-related thoughts cannot explain the findings reported here.

*PANAS findings.* Participants' scores on the PANAS subsets showed no significant effects. Overall means of the Positive Affect and Negative Affect subsets were 2.8 ( $SD = 0.6$ ) and 1.3 ( $SD = 0.4$ ), respectively.

*Dependent variables.* Main dependent variables were participants' negative-affect reactions toward the way they were treated; these reactions were assessed after both the salience and procedure manipulations had been induced. The means and standard deviations of the negative affect scale are displayed in Table 2. As

Table 2  
Means and Standard Deviations of Negative-Affect Reactions Toward Treatment as a Function of Out-of-Control Salience and Procedure (Experiment 2)

Procedure	Out-of-control salience			
	Salient		Nonsalient	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Accurate	1.8	0.7	2.2	1.0
Inaccurate	3.3	0.9	2.9	1.2

Note. Means are on 7-point scales, with higher values indicating more negative-affect reactions toward treatment.

expected, the negative affect scale yielded only a main effect of procedure,  $F(1, 92) = 33.66, p < .001$ , and an interaction effect,  $F(1, 92) = 4.33, p < .05$ . The main effect of procedure indicated that participants' affect ratings were less negative in the accurate-procedure condition than in the inaccurate-procedure condition. More interestingly, the interaction effect showed that this procedure effect was stronger in the out-of-control salient condition,  $F(1, 92) = 31.06, p < .001, \eta^2 = .25$ , than in the nonsalient condition,  $F(1, 92) = 6.93, p < .02, \eta^2 = .07$ .

It can be noted here that out-of-control salience effects were not statistically significant within both the accurate procedure conditions,  $F(1, 92) = 2.05, ns$ , and the inaccurate procedure conditions,  $F(1, 92) = 2.28, ns$ . I return to this in the General Discussion.

### Discussion

The reported findings are supportive for the line of reasoning presented in the current article: As expected, findings of Experiment 2 indicate that people's negative-affect reactions toward treatment are more strongly influenced by variations in justice when they have been thinking about being in situations that are not controllable anymore than when they have not been thinking about this subject. Because loss of control is an important aspect of human uncertainty (cf. Martin, 1999), the findings of Experiment 2 replicate and extend the findings of Experiment 1. Furthermore, the findings of Experiment 2 were found using another, less disruptive, experimental paradigm and another justice manipulation (viz., accurate vs. inaccurate procedures) than in Experiment 1. Before strong conclusions were drawn, however, a third experiment was conducted.

### Experiment 3

The findings of both Experiments 1 and 2 show that asking people to think about issues that are related to human uncertainty leads to stronger effects of perceived procedural fairness on ratings of negative affect. It should be noted here, however, that the operationalizations of negative affect used in Experiment 1 were somewhat different from those in Experiment 2. More specifically, Experiment 1 used disappointment-related items (participants were asked how disappointed and sad they felt about the way they were treated), whereas Experiment 2 used anger-related items (participants were asked how angry, hostile, furious, and infuriated they felt about the way they were treated). Having two related, yet

somewhat different, operationalizations of negative-affect reactions toward treatment was important because if similar results emerged across operationalizations, this would help to establish the robustness and generalizability of the findings. One might wonder, however, whether evidence for the hypothesized effects could be found within one experiment on both types of negative-affect measures. Experiment 3 was conducted to provide an answer to this question.

In Experiment 3, the manipulations of uncertainty salience and procedural justice were the same as in Experiment 1. Dependent variables in Experiment 3 included the disappointment-related items that were measured in Experiment 1 and the anger-related items that were solicited in Experiment 2. Furthermore, the items that were used in Van den Bos and Miedema (2000) to assess participants' positive-affect reactions toward treatment were also measured in Experiment 3. This was done to get a further indication of the robustness of the effects reported here, and because it is important to measure not only people's negative-affect reactions toward perceived fairness, but their positive-affect reactions as well (cf. Tyler & Smith, 1998).

### Method

**Participants and design.** One hundred sixty students (34 men and 126 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 (uncertainty salience: salient vs. nonsalient)  $\times$  2 (procedure: voice vs. no voice) factorial design. Thirty-nine to 41 participants took part in each of the four conditions.

**Experimental procedure.** The experimental procedure was the same as in Experiment 1, except for the points mentioned below. Participants took part in the experiment and answered the questions that constituted the dependent variables and the manipulation checks after and before participating in other, unrelated studies. The studies lasted a total of 2 hr, and participants were paid 20 Dutch guilders for their participation.

After the uncertainty-salience manipulation (which was the same as in Experiment 1), participants answered the PANAS items. This again yielded reliable scales of PA ( $\alpha = .78$ ) and NA ( $\alpha = .84$ ). Procedure was then manipulated in the same way as in Experiment 1.

After this, the dependent variables of Experiment 3 were solicited: The same disappointment-related ratings of negative affect as in Experiment 1 were measured (participants were asked how disappointed and sad they felt about the way they were treated;  $\alpha = .75$ ). The same anger-related ratings of negative affect as in Experiment 2 were assessed (participants were asked how angry, hostile, furious, and infuriated they felt about the way they were treated;  $\alpha = .91$ ). The same ratings of positive affect as in Van den Bos and Miedema (2000, Experiments 1 and 3) were solicited: Participants were asked how happy (1 = *very unhappy*, 7 = *very happy*), content (1 = *very discontent*, 7 = *very content*), and satisfied (1 = *very dissatisfied*, 7 = *very satisfied*) they felt about the way they were treated ( $\alpha = .88$ ).

The manipulation checks of procedure and the procedural justice judgments were the same as in Experiment 1. When the participants had answered these questions, they were thoroughly debriefed and paid for their participation.

### Results

**Manipulation checks.** The two manipulation checks of procedure (the voice check and the no-voice check) yielded only a main effect of procedure at both the multivariate level and the univariate levels: multivariate  $F(2, 155) = 214.82, p < .001$ ; for the voice



check,  $F(1, 156) = 336.34, p < .001$ ; for the no-voice check,  $F(1, 156) = 410.62, p < .001$ . Participants in the voice condition agreed more with the statement that they received an opportunity to voice their opinion ( $M = 5.9, SD = 1.5$ ) than did participants in the no-voice condition ( $M = 1.7, SD = 1.3$ ). Participants in the no-voice condition agreed more with the statement that they did not receive an opportunity to voice their opinion ( $M = 6.3, SD = 1.2$ ) than did participants in the voice condition ( $M = 2.0, SD = 1.5$ ). This suggests that procedure was successfully operationalized.

Similarly, participants' procedural justice judgments (procedural fairness and justification) yielded only a main effect of procedure at both the multivariate level and the univariate levels: multivariate  $F(2, 155) = 57.40, p < .001$ ; for procedural fairness judgments,  $F(1, 156) = 99.99, p < .001$ ; for procedural justification judgments,  $F(1, 156) = 92.76, p < .001$ . Participants who had received an opportunity to voice their opinion judged the procedure to be more fair ( $M = 5.4, SD = 1.6$ ) and justified ( $M = 5.0, SD = 1.5$ ) than did participants who did not receive such an opportunity ( $M_s = 2.9$  and  $2.7, SD_s = 1.5$  and  $1.5$ , respectively). This shows that the manipulation of procedure was successful in affecting the relative strength of participants' procedural justice judgments in ways that were intended with this manipulation.

**Uncertainty responses.** Two judges coded whether the answers that participants wrote down showed that they had been thinking about their being uncertain. As expected, the two judges indicated independently of each other that what participants wrote down showed that participants in the uncertainty-salient condition had been thinking of their being uncertain, whereas those in the nonsalient condition had not. This suggests that uncertainty salience was successfully operationalized.

In the uncertainty-salient condition, participants were asked to write down their responses when they thought of being uncertain. To assess whether this led participants to think about death-related issues, two judges coded whether the answers that participants wrote down in both salience conditions had anything to do with death. Independently of each other, the judges agreed that all answers had nothing to do with death but with uncertainty. Thus, as expected, death-related thoughts cannot explain the findings reported here.

**PANAS findings.** Participants' scores on the PANAS subsets showed no significant effects at both the multivariate level and the univariate levels. Overall means of the PA and NA subsets were 3.0 ( $SD = 0.6$ ) and 1.4 ( $SD = 0.5$ ), respectively.

**Comparability measures.** Participants' comparability judgments yielded no significant effects at either the multivariate level or the univariate levels. Participants indicated that the other participant had performed equally well in the work round ( $M = 4.0, SD = 0.4$ ), and was equally good in performing the tasks ( $M = 4.0, SD = 0.4$ ). It can be concluded that participants thought of the other person as a comparable person with respect to the tasks that were completed in the experiment.

**Percentage findings.** Participants who were allowed voice ( $n = 80$ ) typed in their opinion about the percentage of tickets that they should receive relative to the other participant. An ANOVA yielded no significant effect of uncertainty salience. Inspection of the means indicated that participants typed in that the lottery tickets should be divided equally between themselves and the other participant: Seventy-four of the participants answered that they

should get 50% of the tickets, and the mean percentage was 50.6% ( $SD = 5.6$ ). These findings are supportive of equity theory: Participants preferred to divide outcomes equally between themselves and the other participant (who contributed an equal amount of inputs, and who hence deserved—according to equity theory—to receive the same amount of outputs as the participants themselves).

**Dependent variables.** Main dependent variables were participants' negative-affect reactions toward treatment (both disappointment- and anger-related reactions) and positive-affect reactions toward treatment; these reactions were assessed after both uncertainty salience and procedure had been induced. The means and standard deviations of the disappointed-related, anger-related, and positive affect scales are displayed in Table 3. I first inspected the multivariate effects on the three scales. This revealed multivariate main effects of procedure,  $F(3, 154) = 59.09, p < .001$ , and uncertainty salience,  $F(3, 154) = 4.18, p < .01$ ; these effects were qualified by a multivariate interaction effect,  $F(3, 154) = 4.83, p < .01$ , showing that, as hypothesized, the effect of procedure was stronger in the uncertainty-salient condition,  $F(3, 154) = 43.38, p < .001, \eta^2 = .46$ , than in the nonsalient condition,  $F(3, 154) = 20.69, p < .001, \eta^2 = .29$ . After this, the univariate effects on the three scales were inspected.

Participants' disappointment-related reactions toward the way they were treated showed main effects of procedure,  $F(1, 156) = 11.96, p < .01$ , and uncertainty salience,  $F(1, 156) = 4.05, p < .05$ ; these effects were qualified by a significant interaction effect,  $F(1, 156) = 5.43, p < .03$ . As predicted, the effect of procedure was stronger in the uncertainty-salient condition,  $F(1, 156) = 16.81, p < .001$ , than in the nonsalient condition,  $F < 1$ .

Participants' anger-related reactions toward treatment showed only a main effect of procedure,  $F(1, 156) = 7.00, p < .01$ , and an interaction effect,  $F(1, 156) = 11.11, p < .01$ . As expected, the effect of procedure was stronger in the uncertainty-salient condition,  $F(1, 156) = 18.15, p < .001$ , than in the nonsalient condition,  $F < 1$ .

Participants' positive-affect reactions toward treatment showed only a main effect of procedure,  $F(1, 156) = 161.66, p < .001$ , and

Table 3  
Means and Standard Deviations of Disappointment-Related, Anger-Related, and Positive-Affect Reactions Toward Treatment as a Function of Uncertainty Salience and Procedure (Experiment 3)

Type of affect reactions and procedure	Uncertainty salience			
	Salient		Nonsalient	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Disappointment related				
Voice	1.4	0.7	2.2	1.4
No voice	2.5	1.4	2.5	1.4
Anger related				
Voice	1.5	0.9	2.1	1.4
No voice	2.7	1.6	1.9	1.2
Positive				
Voice	5.2	0.9	4.7	0.9
No voice	2.9	0.9	3.3	1.0

Note. Means are on 7-point scales, with higher values indicating more positive ratings of the dependent variable in question.

an interaction effect,  $F(1, 156) = 9.66, p < .01$ . As hypothesized, the effect of procedure was stronger in the uncertainty-salient condition,  $F(1, 156) = 126.72, p < .001, \eta^2 = .45$ , than in the nonsalient condition,  $F(1, 156) = 45.54, p < .001, \eta^2 = .23$ .

Finally, it can be noted that within the voice conditions, effects of uncertainty salience were significant at the multivariate level,  $F(3, 154) = 4.39, p < .01$ , were significant for disappointment-related reactions,  $F(1, 156) = 9.43, p < .01$ , were not significant for anger-related reactions,  $F(1, 156) = 3.76, ns$ , and were significant for positive-affect reactions,  $F(1, 156) = 6.00, p < .02$ . Within the no-voice conditions, effects of uncertainty salience were significant at the multivariate level,  $F(3, 154) = 4.77, p < .01$ , were not significant for disappointment-related reactions,  $F < 1$ , and were significant for anger-related reactions,  $F(1, 156) = 7.97, p < .01$ , and positive-affect reactions,  $F(1, 156) = 4.72, p < .04$ . I return to this in the General Discussion.

### Discussion

The reported findings are supportive of the line of reasoning presented here. That is, as expected, findings indicate that people's affective reactions toward their treatment are more strongly influenced by variations in justice (viz., voice vs. no-voice procedures) when the participants have been thinking about uncertainty than when they have not been thinking about this subject. Furthermore, these effects have been found on disappointment-related ratings of negative affect (cf. Experiment 1), on anger-related ratings of negative affect (cf. Experiment 2), and on ratings of positive affect (cf. Van den Bos & Miedema, 2000). As predicted, all three dependent variables showed stronger effects of perceived fairness under uncertainty-salient conditions. Thus, in line with predictions, the findings of Experiment 3 reveal that asking people to think of their uncertainty leads to stronger effects of perceived fairness on their affective reactions toward treatment. In this way, the findings of Experiment 3 provide supportive evidence for my line of reasoning that uncertainty salience is an important moderator of people's reactions to perceived fairness.

### General Discussion

The findings of the three experiments presented here show that uncertainty salience affects reactions to perceived fairness: Asking people to think about issues that are related to their uncertainties leads to stronger effects of perceived fairness on their affective reactions toward treatment. Conducting three experiments was important because if similar results had emerged in the experiments, this would have helped establish the robustness and generalizability of the findings presented here. Taken together, the findings of the three experiments reveal that fairness matters to people especially when they have focused on uncertain aspects of their lives.

A close inspection of the findings reported in the current article shows that in Experiment 1 significant effects of uncertainty salience were found on participants' reactions within the unfair conditions and not within the fair conditions. In Experiment 2, effects of the salience manipulation were not statistically significant within both the fair and unfair conditions. In Experiment 3, effects of uncertainty salience were found within both the fair and unfair conditions. These differential findings may have been

caused by, among other things, the difference in psychological impact of the different procedure and salience manipulations in the three experiments presented here. Future researchers may want to find out when fairness versus unfairness affects people's reactions more strongly as a function of various salience manipulations. It should be noted here, however, that by showing effects of uncertainty salience on people's reactions in ways that were predicted on the basis of fairness heuristic theory, the present findings have provided surprising new insights into the antecedents of reactions to social justice: People react more strongly to perceived fairness when they are trying to deal with uncertain aspects of human life. It is my true hope that, as a result of this enhanced insight into people's reactions to fair and unfair events, future researchers will further explore the exciting issues of social justice and human uncertainty.

The findings presented here fit in a line of research that suggests that people pay more attention to fairness when they are uncertain about things such as an authority's trustworthiness (Van den Bos, Wilke, & Lind, 1998), distributive issues (Van den Bos, Lind, et al., 1997; Van den Bos, Wilke, Lind, & Vermunt, 1998; cf. Skitka, 1998), or procedural issues (Van den Bos, 1999). For example, Van den Bos, Wilke, and Lind (1998) argued that when people enter a situation in which they are faced with an authority they do not know, they want to have information on whether they can trust the authority. As a result, when information about whether an authority can be trusted is not available, people will rely heavily on perceived procedural fairness, yielding strong fair-process effects. However, when people receive information that the authority either can or cannot be trusted, they are less in need of procedural fairness information, yielding weaker fair-process effects. This suggests that when people move from uncertainty to certainty, they end up needing fairness less.

The current article, however, has focused on a different cognitive process. That is, whereas the previous studies (Van den Bos, 1999; Van den Bos, Lind, et al., 1997; Van den Bos, Wilke, & Lind, 1998; Van den Bos, Wilke, Lind, & Vermunt, 1998; cf. Skitka, 1998) have paid attention to the cognitive process through which people are less affected by variations in fairness information when they have been made more certain, the present article has focused on the cognitive process whereby people are more affected by variations in fairness when they are reminded about things that make them feel uncertain. In this way, the current contribution not only extends previous insights by pointing out that uncertainty salience is a key antecedent of why fairness matters to people but also by calling attention to a cognitive process unidentified in previous social-justice studies: Moving from relative certainty to uncertainty makes fairness more important for people.

It should be noted here that there is evidence in the research literature that high self-esteem persons are more affected by their perceived level of voice than are low self-esteem persons (Brockner et al., 1998). Most pertinent for the present purposes, the fifth study in the Brockner et al. (1998) article consisted of an experimental design in which procedure (voice vs. no voice) and participants' beliefs about their capability to provide meaningful input (higher vs. lower) were orthogonally manipulated. Results showed that procedure had a greater impact on the satisfaction level of participants who were led to believe that they were more capable of providing meaningful input. In contrast with this, Vermunt, Van Knippenberg, Van Knippenberg, and Blaauw (in press), found that

procedural fairness information was more strongly related to the reactions of low- as opposed to high-self-esteem respondents. These differential findings may be caused by different operationalizations of fairness (see, e.g., Brockner et al., 1998 vs. Vermunt et al., in press) and different operationalizations of uncertainty (e.g., extremely low vs. moderately low vs. only thinking about issues related to human uncertainty).

Future researchers may want to explore these, and other, operationalizations of the concepts investigated in the current article and in Brockner et al. (1998) and Vermunt et al. (in press). Those doing future research may also want to study the relationships between uncertainty, self-esteem, confidence, and control (for a discussion on the similarities and distinctions between these concepts, see Van den Bos & Lind, 2000). This ultimately may contribute to a more refined analysis of the relationship between perceived fairness, uncertainty, and related concepts. It seems fair to say, however, that at this moment there are relatively more studies that suggest that uncertain persons tend to be more affected by variations in fairness (cf. the current findings; see also Skitka, 1998; Van den Bos, 1999; Van den Bos, Lind, et al., 1997; Van den Bos & Miedema, 2000; Van den Bos, Wilke, & Lind, 1998; Van den Bos, Wilke, Lind, & Vermunt, 1998; Vermunt et al., in press) than there are studies that suggest that certain persons are more affected by perceived fairness (cf. Brockner et al. 1998).

I hasten to say, however, that more research on these intriguing topics is needed. This may yield more thorough insights into the psychology of uncertainty.<sup>4</sup> For example, one could argue that people are always faced with uncertainties but that they may vary greatly in importance and level of uncertainty, and that this may affect people's reactions considerably. Furthermore, the uncertainty of whether one will like the new David Bowie album is not the same as uncertainty about layoffs or death. Thus, all uncertainties are not the same and cannot be expected to have the same effects. However, the research findings presented here have revealed that just asking participants two questions of their being uncertain leads to stronger reactions toward perceived fairness. This suggests that uncertainty salience—a concept that, according to my knowledge, has not been studied before—plays an important role in the psychology of social justice.

I think it is reasonable to conclude, therefore, that, compared with previous social justice studies, the findings of the current study tell us something that is very fundamental with regard to people's reactions to social justice. The present findings indicate that fairness matters to people especially when they have been thinking about issues that are related to their uncertainties. This suggests that having identified the importance of uncertainty salience on reactions to perceived fairness may help scientists in their progress toward understanding why fairness matters: The findings presented here suggest that fairness is important for people because they use fairness judgments in processes of uncertainty management.

<sup>4</sup> I thank an anonymous reviewer for pointing this out.

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