

When Do Procedural Fairness and Outcome Fairness Interact to Influence Employees' Work Attitudes and Behaviors? The Moderating Effect of Uncertainty

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Prior research has shown that procedural fairness interacts with outcome fairness to influence employees' work attitudes (e.g., organizational commitment) and behaviors (e.g., job performance, organizational citizenship behavior), such that employees' tendencies to respond more positively to higher procedural fairness are stronger when outcome fairness is relatively low. In the present studies, we posited that people's uncertainty about their standing as organizational members would have a moderating influence on this interactive relationship between procedural fairness and outcome fairness, in that the interactive relationship was expected to be more pronounced when uncertainty was high. Using different operationalizations of uncertainty of standing (i.e., length of tenure as a proxy, along with self-reports and coworkers' reports), we found support for this hypothesis in 4 field studies spanning 3 different countries.

Keywords: procedural fairness, outcome fairness, uncertainty, standing

Organizational justice is concerned with the causes and consequences of employees' perceptions of how fairly they are treated (for several overviews of the literature, see Folger & Cropanzano, 1998; Greenberg & Colquitt, 2005). One important category of consequences consists of the attitudes and behaviors that employees direct toward furthering the goals of organizational authorities and the institutions that the authorities represent. More specifically, employees' willingness to carry out authorities' decisions (e.g., their work motivation and job performance) and their support for the institutions in which authorities render decisions (e.g., their

organizational commitment and organizational citizenship behaviors)—hereafter referred to collectively as *system-referenced reactions*—go a long way toward determining organizational success.

Many studies have shown that employees' perceptions of organizational justice are positively related to their system-referenced reactions (e.g., Lind & Tyler, 1988). For example, the "fair-process effect" refers to the pervasive tendency for people to exhibit more favorable work attitudes and behaviors, such as greater organizational commitment, when they perceive the procedural fairness with which decisions are planned and implemented to be higher (Folger & Konovsky, 1989; Folger, Rosenfield, Grove, & Corkran, 1979; McFarlin & Sweeney, 1992; Tyler, 1999). Furthermore, employees' system-referenced reactions tend to be more favorable when outcome fairness is higher (e.g., Deutsch, 1985). For both theoretical and practical reasons, however, it is important to delineate the conditions under which employees' perceptions of organizational justice (procedural and outcome fairness) are more versus less likely to be positively related to their system-referenced reactions. At the theoretical level, delineating when organizational justice perceptions are more or less influential helps to explain why those perceptions are influential. At the practical level, by knowing when employees' perceptions of organizational justice have more versus less influence on their system-referenced reactions, managers may make more informed decisions about the extent to which they need to be seen as procedurally and/or distributively fair.

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In the course of identifying moderating influences on procedural fairness and outcome fairness, justice researchers also have discovered that these two factors interact with each other to influence employees' system-referenced reactions. Originally demonstrated by Folger and colleagues (e.g., Folger, Rosenfield, & Robinson, 1983) and shown many times since (Brockner & Wiesenfeld, 1996), the interactive relationship between procedural fairness and outcome fairness may be described as follows: The fair-process effect is more pronounced when people have received outcomes that are more unfair or unfavorable.¹

In fact, Colquitt, Greenberg, and Zapata-Phelan (2005) cited the aforementioned process–outcome interaction in their recent review of important conceptual and empirical contributions to the organizational justice literature. It is, however, also important to note that the interactive relationship between procedural fairness and outcome fairness has failed to materialize in some studies (e.g., Dipboye & de Pontbriand, 1981; Tyler & Caine, 1981). Moreover, Chen, Brockner, and Greenberg (2003) found that when people interacted with another party whose status was equal to their own, procedural fairness and outcome fairness did not interact to influence participants' system-referenced reactions. Given the variability in the magnitude of the process–outcome interaction found in previous research, an important next step in the development of organizational justice theory is to identify when the process–outcome interaction effect is more versus less likely to emerge. In the present research, we provide a conceptual rationale that identifies a potential moderator of the process–outcome interaction effect—in particular, employees' uncertainty about their standing as organizational members. As we explain below, the process–outcome interaction is predicted to be more pronounced when people are more uncertain about their standing. The reasoning underlying this prediction also may help us to understand the findings of previous studies in which the interaction effect failed to materialize, a point to which we return in the General Discussion.

“Why” Helps to Delineate “When”

The identification of moderating influences on the process–outcome interaction may be facilitated by considering why the interaction effect appears in the first place. Our speculative explanation of the process–outcome interaction is undergirded by two assumptions that have been well supported in the justice literature (and elsewhere). First, people care about and thus need to make sense of their standing as organizational members (i.e., the extent to which they are held in high regard in the workplace) for several reasons. For one thing, employees' standing has implications for their economic well-being in both the short and the long term (Thibaut & Walker, 1975). Furthermore, employees care about their standing in organizations for more psychological reasons, such as wanting to satisfy their needs for self-esteem and for inclusion (De Cremer & Sedikides, 2008; Lind & Tyler, 1988).

Our second assumption, also well-documented by psychological theory and research, is that people are more likely to engage in sense-making when they receive more undesirable outcomes (i.e., those that are unfair or unfavorable). For example, research on attributional instigation (the study of when people ask why) has shown that people are more likely to seek to understand the reasons for their outcomes (a form of sense-making) when their outcomes are undesirable rather than desirable (e.g., Wong &

Weiner, 1981). Thus, the process–outcome interaction effect may be conceptualized as reflecting people's tendency to engage in greater sense-making in the face of undesirable outcomes.

More specifically, people strive to make sense of their standing as organizational members, particularly in response to unfair outcomes. In other words, unfair outcomes are more psychologically threatening to people, giving them more reason (than do fair outcomes) to be concerned about their standing as organizational members. One type of information they can draw on to make sense of their standing is procedural fairness. The more they perceive procedural fairness to be high, the more likely they are to infer that they are in good standing as organization members and to display various positive system-referenced reactions. From an economic point of view, higher procedural fairness, such as allowing those affected by a decision to have more input into a decision-making process, may lead people to be more optimistic about their chances to receive their share of desired outcomes in the future, even if their current outcomes are unfair or unfavorable. From a psychological vantage point, higher procedural fairness symbolically communicates to employees that they are held in higher regard, relative to how they are likely to feel if they were treated with lower procedural fairness (De Cremer & Sedikides, 2008; Tyler & Lind, 1992; Van Prooijen, Van den Bos, & Wilke, 2002). Note that these sense-making activities that induce people to draw upon and hence be affected by procedural fairness information are less likely to be instantiated when outcomes are relatively desirable (e.g., fair). The net result of the above reasoning is the two-way interaction between procedural fairness and outcome fairness, in which the fair-process effect is stronger in the face of outcomes that are more unfair (Brockner & Wiesenfeld, 1996).

An important but heretofore untested implication of the above reasoning is that people should be more likely to engage in sense-making when they are, in fact, more uncertain about their standing as organizational members (De Cremer, Brebels, & Sedikides, 2008). By definition, higher uncertainty requires people to engage in sense-making to a greater degree (Curley, Yates, & Abrams, 1986; Van den Bos & Lind, 2002). Thus, unfair outcomes experienced under conditions in which people are more uncertain about their standing should make people more likely to use pro-

¹ Outcome favorability and outcome fairness are conceptually distinct. Outcome favorability refers to how much people stand to benefit (economically, psychologically, or both) as a result of the decision that was reached. Outcome fairness refers to the extent to which the outcome is consistent with the prevailing norm or basis for making allocation decisions, such as equity, equality, and need (Deutsch, 1985). Although they are conceptually distinct, outcome favorability and outcome fairness are highly related to each other (with correlations in the .70s; e.g., Brockner et al., 2003). Of greater importance for the purposes of the present studies, outcome favorability and outcome fairness generally have been shown to behave similarly in interacting with procedural fairness to influence employees' work attitudes and behaviors, both across studies (Brockner & Wiesenfeld, 1996) and within studies (Brockner et al., 2003). For purposes of simplification, we use the term outcome fairness for the remainder of the article, in part because it was outcome fairness (rather than outcome favorability) that was examined in the present studies. On conceptual and empirical grounds, however, our assertions pertaining to the interactive relationship between procedural fairness and outcome fairness also apply to the interactive relationship between procedural fairness and outcome favorability.

cedural fairness information to make sense of their standing, thereby eliciting a stronger interactive relationship between process fairness and outcome fairness. In contrast, when people are less uncertain about their standing, then unfair outcomes should be less likely to induce people to draw upon and hence be affected by procedural fairness information, in which case a weaker interactive relationship between process fairness and outcome fairness should be expected.

Higher uncertainty about standing may come about for a variety of reasons. For example, if people are relatively new to the organization, they are likely to be more uncertain about their standing as organization members. If they believe that their organization is undergoing significant change, such as a downsizing in which they may lose their jobs, they are likely to be more uncertain about their standing. We hypothesize that those who are more uncertain about their standing are more likely to exhibit the process–outcome interaction than are their less uncertain counterparts.

Hypothesis 1: The process–outcome interaction effect, in which the positive relationship between procedural fairness and employees' system-referenced reactions is more pronounced when outcomes are more unfair, will be exhibited to a greater extent when employees are more uncertain about their standing as organization members.

We tested for the predicted three-way interaction effect (Procedural Fairness \times Outcome Fairness \times Uncertainty About Standing) in four organizational field studies, in which the dependent variable consisted of different measures of employees' system-referenced reactions. Moreover, participants' uncertainty about their standing as organization members was operationalized in different ways across the four studies. In addition, the measures of procedural fairness and outcome fairness differed somewhat across studies as well. To the extent that consistent results emerge across studies in spite of these various operational differences, we gain greater confidence in the reliability and external validity of the findings.

Study 1

Method

Overview. In Study 1, employees' length of tenure in the organization was treated as a proxy for uncertainty: The lower the tenure, the more uncertain employees are likely to be about their standing as organizational members. This line of reasoning follows directly from Kramer's (2001) observation that relative newcomers in organizations engage in sense-making to reduce uncertainty about their standing (e.g., how favorably they are regarded by organizational authorities). Such a perspective is also supported by research that conceptualizes newcomers as active participants in the socialization process, in which they proactively seek information to define their roles, positions, and relationships with organizational authorities (e.g., Ashford & Black, 1996; Bauer & Green, 1994).

All participants completed a survey (described below) that included measures of their length of tenure, outcome fairness, procedural fairness, and the system-referenced dependent variable: organizational commitment.

Research setting. Participants were professional employees of a large Dutch chemical multinational that is active in the life science, nutritional products, performance materials, and industrial chemicals industries. It has more than 250 offices and production sites in more than 40 countries in Europe, Asia, and the Americas. Given that the study was conducted in a Dutch-speaking context, all measures were translated from English into Dutch by a first translator and then independently back-translated into English by a second translator, following the procedure recommended by Brislin (1980). Minor discrepancies between the original English version and the back-translated version resulted in adjustment in the Dutch version on the basis of direct discussion between the translators. This translation approach also was used in Studies 2 and 3.

Sample and procedures. The survey was conducted in the Netherlands as part of an ongoing research program studying factors that commit young and highly educated employees to their organizations. We contacted and worked in close collaboration with the company's young professionals network, of which each Dutch employee below the age of 40 with a higher education degree is usually a member. Using the network's membership lists and additional personnel records, we compiled a final list of all 439 individuals in the target group (i.e., Dutch employees below the age of 40 with a higher education degree). These employees were sent an invitation to participate in a research study, along with a questionnaire and a return envelope, through the company's internal mail service.

To maximize the response to our questionnaire, we sought and received the support of a committee consisting of the chairman of the board of directors, the head of personnel and development, and the corporate planning director. This committee was featured prominently in the letterhead of the invitation to the participants. The network repeatedly announced and recommended completion of the survey in its newsletter in the 2 months prior to its administration. In both the newsletter and the letter accompanying the questionnaire, we invited participation, explained the purpose of the survey, and urged readers to visit a company intranet website dedicated to the survey. Finally, we announced that we would be raffling a number of tokens of appreciation among respondents. All of these efforts resulted in 260 usable questionnaires (i.e., 59% response).

All respondents had higher vocational or university education; 66% were male; and their average age was 30.40 years ($SD = 3.12$), ranging from 24 years to 38 years. The average organizational tenure was 5.00 years ($SD = 4.10$). Ninety-one percent had a full-time employment contract (i.e., either 36 or 38 hr per week). At the time of the survey, only 40 respondents (15%) had managerial responsibilities, supervising a median number of six people. The median number of previous employers was one; for almost half of the sample (45%), their current company was their first employer.

Measures. All measures were responded to on a 5-point scale (1 = *strongly disagree*, 5 = *strongly agree*).

Outcome fairness consisted of six items from Price and Mueller (1986) that assess the extent to which individuals perceive their rewards as fair in relation to their inputs such as effort and responsibility. Sample items are: "I am fairly rewarded for the work that I have done well" and "I am fairly rewarded considering my responsibilities."

Procedural fairness was measured using the instrument developed by Moorman (1991). One example of this seven-item scale is, “Managers at my company make sure to hear the concerns of all those affected before making a decision.”

Organizational commitment was based on three items taken from the affective commitment subscale developed by Allen and Meyer (1990); for example, “I feel at home at this firm” and “I do not really feel part of the family at this company” (reverse-coded).

Results

Summary statistics (means, standard deviations, correlations and Cronbach’s α values) for the study variables are displayed in Table 1. To test our hypothesis, we conducted a hierarchical regression analysis in which organizational commitment was predicted by the main effects of procedural fairness, outcome fairness and length of tenure (in months) at Step 1, the two-way interactions at Step 2, and the three-way interaction at Step 3 (see Table 2). Following Aiken and West (1991), procedural fairness, outcome fairness, and tenure were mean centered, and the interaction terms were calculated on the basis of these mean-centered scores.

Table 2 shows the regression results. Of greatest importance, the predicted three-way interaction was significant. Simple slope analyses were conducted to illustrate the nature of the three-way interaction (Aiken & West, 1991). More specifically, we examined the simple slope of the two-way interaction between procedural fairness and outcome fairness at low and at high levels of tenure. When tenure was low (one *SD* below the mean) and participants were presumably more uncertain about their standing as organizational members, the interaction between outcome fairness and procedural fairness was significant and, as expected, negative in sign ($\beta = -.31, p < .001$). More specifically, among those with low tenure, procedural fairness was more positively related to organizational commitment when outcome fairness was low rather than high (see Figure 1A). In contrast, when tenure was high (one *SD* above the mean) and participants were presumably less uncertain about their standing as organizational members, the interaction between procedural fairness and outcome fairness was not significant ($\beta = .19, p > .05$; see Figure 1B).

Study 2

As expected, tenure (as a proxy for how uncertain participants were of their standing as organization members) moderated the interactive effect of procedural fairness and outcome fairness on organizational commitment. The tendency for the fair-process effect to be stronger in the face of unfair rather than fair outcomes

Table 2
Results of Hierarchical Regression Analysis of Organizational Commitment (Study 1)

Dependent variable	Organizational commitment		
	Step 1	Step 2	Step 3
Outcome fairness (OF)	.04	.06	.07
Procedural fairness (PF)	.29***	.29***	.29***
Tenure	-.10	-.09	-.12
OF \times PF		-.09	-.06
OF \times Tenure		-.08	-.14
PF \times Tenure		.01	-.04
OF \times PF \times Tenure			.21***
R^2	.10	.12	.15
R^2_{adj}	.09	.10	.13
R^2_{change}		.01	.03
Overall F	10.31***	5.83***	6.55***
df	3, 266	6, 263	7, 262

*** $p < .001$.

was exhibited to a greater degree by the relative newcomers to the organization, who presumably were more uncertain about their standing. In addition to the fact that the measure of organizational commitment was only moderately reliable, one shortcoming of Study 1 is that participants’ length of tenure was merely a proxy for uncertainty about their standing as organizational members. Therefore, it is important to reexamine the three-way interaction effect in Study 1 in which the construct of uncertainty is operationalized more directly.

Accordingly, in Study 2 we directly measured participants’ perceptions of their standing as organization members. As in Study 1, participants also completed measures of procedural fairness, outcome fairness, and organizational commitment. We predicted a three-way interaction effect: When participants were relatively uncertain about their standing as organizational members, the process–outcome interaction effect was expected to emerge, in which the positive relationship between procedural fairness and organizational commitment is stronger when outcomes are relatively unfair. In contrast, when uncertainty is low, the process–outcome interaction effect was not expected to materialize.

Method

Overview of the study. All participants in Study 2 came from a single organization that was about to undergo a downsizing.

Table 1
Summary Statistics (Study 1)

Variable	<i>M</i>	<i>SD</i>	Scale	1	2	3	4
1. Organizational commitment	4.27	0.62	1–5	(.63)			
2. Procedural fairness	3.16	0.64	1–5	.30*	(.92)		
3. Outcome fairness	3.49	0.93	1–5	.14*	.34*	(.81)	
4. Tenure	59.41	50.09	# of months	-.11	.00	.00	—

Note. $N = 260$. Alpha coefficients are displayed on the diagonal.
* Correlations significant at $p < .01$.

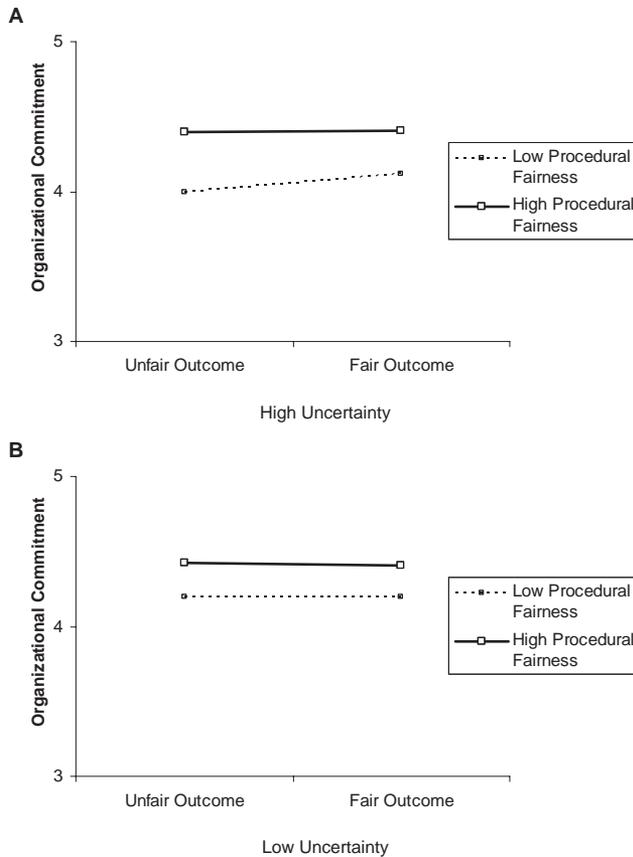


Figure 1. A: The effect of outcome fairness and procedural fairness on organizational commitment when uncertainty about standing is high (Study 1). B: The effect of outcome fairness and procedural fairness on organizational commitment when uncertainty about standing is low (Study 1).

They were working in different departments; employees were expected to experience greater uncertainty about their standing as organization members in some departments than in others. Specifically, some participants were working in departments in which they were informed that no one would be laid off (“no-layoff departments”). The others were working in departments in which layoffs were going to occur (“layoff departments”). Moreover, within the layoff departments, management had not yet announced which employees were going to lose their jobs and which were going to remain. Not knowing whether their employment would continue presented an obvious threat to stable working conditions and thus is likely to make employees more uncertain about their standing as organization members in the layoff departments than in the no-layoff departments.

Furthermore, all participants in Study 2 completed a measure of uncertainty about their standing as organization members. This was done for two reasons. First, it enabled us to validate the assumption that employees’ uncertainty about their standing as organization members would be greater in the layoff departments than in the no-layoff departments. Second, it provided us with a more direct measure of uncertainty than whether participants came from the layoff departments or from the no-layoff departments. In testing the hypothesized three-way interaction in Study 2 between

procedural fairness, outcome fairness, and uncertainty, we classified participants as relatively high or low in uncertainty on the basis of how they responded to the items designed to measure uncertainty. In other words, regardless of whether participants came from a layoff department or from a no-layoff department, we predicted that those who were more uncertain about their standing as organizational members would be more likely to exhibit the interactive relationship between procedural fairness and outcome fairness, relative to their counterparts who were less uncertain about their standing as organizational members.

Sample and procedures. The study was conducted in a multinational company based in Germany that is a major producer of pharmaceutical products and medical equipment. All prospective participants were asked to complete a questionnaire containing the scales described below. Those who were willing to participate mailed the completed surveys directly to a research assistant. In total, 250 employees were contacted and 198 of them completed the questionnaire and returned it (79% response rate). Eighty-seven percent of the respondents were male, 11% were female, and the sex of 2% of the participants could not be determined from the questionnaire. The majority of respondents (65%) were between 31 and 50 years old.

At the time of the study, the company was planning changes in the different departments producing pharmaceuticals. However, not all departments were going to be equally affected by these changes. That is, employees in two departments (the layoff departments) knew that there would be layoffs in their departments and that as a result some of them would lose their jobs (it was uncertain, however, who would have to go). In contrast, employees in two other departments (the no-layoff departments) were assured that no one would be laid off. The company allowed us to distribute questionnaires in both the layoff departments and the no-layoff departments, thus forming two subgroups of employees; those from the layoff departments were expected to be more uncertain about their standing as organization members ($N = 89$) than those from the no-layoff departments ($N = 109$).

Measures. All items were answered on a 5-point scale, ranging from 1 (*very much so*) to 5 (*not at all*). Responses were scored (or, when necessary, reverse scored) such that higher scores indicated higher uncertainty about standing, higher outcome fairness, higher procedural fairness, and higher organizational commitment.

To assess whether participants in the layoff and the no-layoff departments experienced different levels of uncertainty about their standing as organization members, we asked them to indicate how much they agreed with two items that have been used in prior research (De Cremer & Sedikides, 2005; Dykman, 1998): “How I feel about my position within the company changes from day to day,” and “Compared to other colleagues, my feelings about my evaluation as an employee in this company are unstable.”

The measure of outcome fairness consisted of two items devised by Colquitt (2001): “The outcome of my work is appropriate for the work that I have completed,” and “The outcome of my work reflects what I have contributed to the organization.”

Procedural fairness was measured by the six items constructed by Colquitt (2001), adapted slightly to fit the context of the present organization. The scale focused on Leventhal, Karuza, and Fry’s (1980) six procedural justice rules: consistency, representativeness, bias suppression, accuracy, correctability, and ethicality. The scale included items such as, “I am able to express my views

during the work procedures,” and “My superiors judge me in an objective and fair manner.”

Organizational commitment was measured with four items taken from Becker and Billings (1993). Sample items include, “I am strongly committed to this company,” and “When I talk about this organization, I usually say we rather than they.”

Results

Summary statistics are presented in Table 3.

Department differences in uncertainty. We conducted a *t* test to evaluate whether participants from the layoff departments felt more uncertain about their standing as organization members, relative to their counterparts in the no-layoff departments. In fact, uncertainty was significantly greater in the layoff departments than in the no-layoff departments, $t(196) = 4.18, p < .001; Ms = 3.30$ and $2.67, SDs = 1.05$ and 1.03 , respectively. These findings provide suggestive evidence that the measure of uncertainty was valid. That is, participants may be expected to rate themselves as more uncertain in the layoff departments than in the no-layoff departments. The fact that this difference emerged supports the validity of the scale used to measure uncertainty.

Organizational commitment. Having verified that participants were more uncertain about their standing as organization members in the layoff departments than in the no-layoff departments, we then went on to examine the three-way interaction between procedural fairness, outcome fairness, and uncertainty about standing. As in Study 1, we conducted a hierarchical regression analysis. In the first step we entered the main effects of the independent variables of procedural fairness, outcome fairness, and how uncertain participants reported being about their standing as organization members (along with whether they came from a layoff department or from a no-layoff department, as a dummy control variable). In the second step we entered all two-way interactions between the three independent variables, and in the third step we entered the three-way interaction between the independent variables. Following Aiken and West (1991), procedural fairness, outcome fairness, and uncertainty were mean centered, and the interaction terms were calculated on the basis of these mean-centered scores.

Table 4 shows the regression results. Of greatest importance, the expected three-way interaction was significant ($\beta = -.18, p < .05$). Once again, to help illustrate the nature of the three-way interaction we conducted simple slope analyses of the two-way interaction between outcome fairness and procedural fairness at high and low levels of uncertainty (Aiken & West, 1991). Among those who felt more uncertain about their standing as organiza-

Table 4
Results of Hierarchical Regression Analysis of Organizational Commitment (Study 2)

Variable	Organizational commitment		
	Step 1	Step 2	Step 3
Dependant variable			
Outcome fairness (OF)	.17*	.15*	.12 [†]
Procedural fairness (PF)	.44**	.44**	.42**
Uncertainty (U)	-.08	-.08	-.02
Layoff department (control)	.00	.01	.01
OF × PF		-.03	-.09
OF × U		-.06	-.09
PF × U		-.08	-.05
OF × PF × U			-.18*
<i>R</i> ²	.33	.34	.36
<i>R</i> _{adj} ²	.31	.32	.33
<i>R</i> ² _{change}		.01	.02
Overall <i>F</i>	23.24**	13.85**	13.10**
<i>df</i>	4, 193	7, 190	8, 189

[†] $p < .10$. * $p < .05$. ** $p < .01$.

tional members (one *SD* above the mean), the interaction between outcome fairness and procedural fairness was significantly related to commitment and as expected the sign of the simple slope was negative ($\beta = -.20, p < .05$). Thus, as can be seen in Figure 2A, among those who felt more uncertain, procedural fairness was more positively related to organizational commitment when outcomes were more unfair. In contrast, as shown in Figure 2B, among those employees who felt less uncertain about their standing as organization members (one *SD* below the mean), the interaction between outcome fairness and procedural fairness was not significant ($\beta = .03, p > .05$).

Study 3

The results of Study 2 showed that employees’ uncertainty about their standing as organizational members moderated the interactive effect of outcome fairness and procedural fairness on their organizational commitment. Study 3 sought to extend in two ways the generality of the three-way interaction effect found in Studies 1 and 2: First, we examined a different dependent variable—namely, organizational citizenship behavior (Organ, 1988)—that reflects yet another system-referenced dependent variable reflective of employees’ willingness to support organizational authorities and the institutions that they represent. Second, we

Table 3
Summary Statistics (Study 2)

Variable	<i>M</i>	<i>SD</i>	Scale	1	2	3	4
1. Organizational commitment	2.46	0.77	1–5	(.77)			
2. Procedural fairness	2.50	0.85	1–5	.55***	(.84)		
3. Outcome fairness	3.01	1.04	1–5	.41***	.51***	(.82)	
4. Uncertainty	2.95	1.05	1–5	-.22***	-.26***	-.15*	(.67)

Note. *N* = 198. Alpha coefficients are displayed on the diagonal.
* $p < .05$. *** $p < .001$.

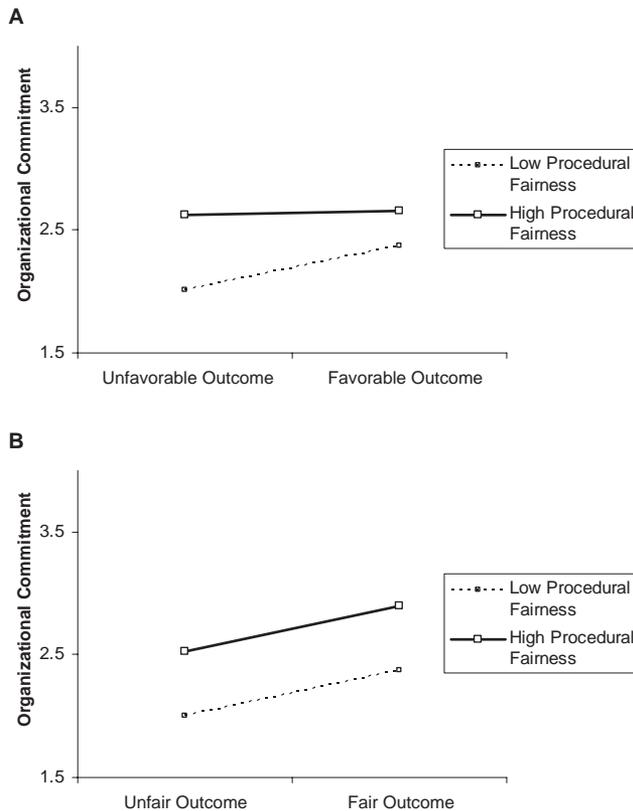


Figure 2. A: The effect of outcome fairness and procedural fairness on organizational commitment when uncertainty about standing is high (Study 2). B: The effect of outcome fairness and procedural fairness on organizational commitment when uncertainty about standing is low (Study 2).

employed a different measure of uncertainty about standing, one that has been used and validated in previous research.

Once again, the primary prediction was the three-way interaction effect: When employees were more uncertain about their standing as organizational members, we hypothesized that outcome fairness and procedural fairness would interact, such that procedural fairness was expected to be more positively related to organizational citizenship behavior (OCB) when outcomes were more unfair. Among those lower in uncertainty, there should be little or no interactive relationship between outcome fairness and procedural fairness.

Method

Sample and procedures. This study was part of larger study on leadership involving 973 Dutch people who worked at least 8 hr a week and had a supervisor. They were randomly selected from the national Dutch telephone guide. The people who were selected were sent a letter in which they were asked to participate in a study on work experiences by filling out an enclosed questionnaire and returning it in a prepaid envelope. Participation was anonymous, and participants were given a telephone number where they could reach the researchers in case they had any additional questions or comments. Finally, to improve the response rate, they were informed that a lottery would be conducted in which three gift

certificates (each worth €100 or approximately \$140 at the time of the study) would be randomly allocated among the participants. Of the original 973 questionnaires, 16 were returned because the intended respondents no longer resided at the address to which the survey was sent, leaving a total of 957 questionnaires that reached the intended respondents. A reminder to complete the survey was sent to all intended respondents 2 weeks after the first mailing.

A total of 322 questionnaires were returned. The sample was 65% male and 35% female. Two percent had completed lower education (primary school), 40% had completed secondary education, 26% had completed a vocational education program, 23% had a bachelor's degree, and 9% had a master's degree. Thirty-seven percent had a net monthly salary below €1,500 (\$2,227), 36% earned between €1,500 and €2,000 (\$2,969), 14% earned between €2,000 and €2,500 (\$3,711), and 14% earned more than €2,500. Their mean age was 42.71 years ($SD = 10.26$).

Measures. All items were written in Dutch and answered on 5-point scales (1 = *strongly disagree*, 5 = *strongly agree*).

Procedural fairness was assessed with the seven-item scale developed by Colquitt (2001), which contains the procedural justice rules proposed by Leventhal et al. (1980). Examples include, "To what extent are you able to express your views and feelings?" and "To what extent are procedures applied consistently?"

Outcome fairness was measured with Colquitt's (2001) four-item scale (e.g., "To what extent does your salary reflect the effort you have put into your work?").

OCB was assessed using the five-item "Individual Initiative" subscale of Moorman and Blakely's (1995) OCB measure. Sample items are, "I often motivate others to express their ideas and opinions," and "I frequently communicate to coworkers suggestions on how the group can improve."

Uncertainty about standing was measured with a five-item scale adopted from De Cremer and Sedikides (2008). Sample items are, "On some days I feel that my standing is positive in my relations with others, whereas on other days I don't feel like that at all," and, "I spend a lot of time wondering whether I have a positive standing in my relations with others."²

Results

Summary statistics for the study variables are displayed in Table 5. To test our hypothesis, we conducted a hierarchical regression analysis in which OCB was predicted by the main effects of procedural fairness, outcome fairness, and uncertainty about standing on the first step, the two-way interactions on the second step, and the three-way interaction on the third step. Following Aiken and West (1991), all three independent variables were mean-centered and the interaction terms were calculated on the basis of these mean-centered scores. Table 6 shows the regression results.

² Although the measure of uncertainty about standing in Study 3 did not explicitly require participants to indicate the extent to which they felt uncertain about their standing in the workplace, it seems likely that participants had the work setting in mind when completing the survey, which was billed as being in reference to their work experiences. At the very least, the measure of uncertainty about standing in Study 3 is a likely predictor of how much people experience uncertainty about their standing as organizational members.

Table 5
Summary Statistics (Study 3)

Variable	M	SD	Scale	1	2	3	4
1. OCB	3.65	0.56	1–5	(.72)			
2. Procedural fairness	2.80	0.85	1–5	.16***	(.84)		
3. Outcome fairness	2.49	1.05	1–5	.13*	.65***	(.74)	
4. Uncertainty	2.32	0.65	1–5	-.24***	-.14*	-.02	(.80)

Note. *N* = 322. Alpha coefficients are displayed on the diagonal. OCB = organizational citizenship behavior.
* *p* < .05. *** *p* < .001.

Of greatest importance, the predicted three-way interaction was significant ($\beta = -.37, p < .05$). To illustrate the nature of the three-way interaction effect, we conducted simple slope analyses of the two-way interaction between procedural fairness and outcome fairness at high and low levels of uncertainty (Aiken & West, 1991). When uncertainty was high (one *SD* above the mean), the interaction between procedural fairness and outcome fairness was significant ($\beta = -.13, p < .01$) and took the predicted form: Procedural fairness was more positively related to OCB in the face of relatively unfair outcomes (see Figure 3A). Although Figure 3A also seems to suggest that among high uncertainty participants outcome fairness was (unexpectedly) inversely related to OCB when procedural fairness was high, the simple slope of outcome fairness was actually nonsignificant ($p > .10$) in this instance. Moreover, and as found in Studies 1 and 2, when uncertainty was low (one *SD* below the mean), the interaction between procedural fairness and outcome fairness was not significant ($\beta = .02, p > .10$; see Figure 3B).

Study 4

Study 4 was designed to extend the results of Studies 1–3 in several important ways. First, as in Studies 2 and 3, we measured the extent to which employees were uncertain about their standing as organization members, this time using coworkers’ (rather than self-report) ratings of the focal person’s uncertainty. Second, the

dependent measure of system-referenced reactions took a different form from the measures examined in Studies 1–3. In Study 4 the dependent variable consisted of a behavioral measure, namely, participants’ performance with customers, as indicated by their supervisors’ reports of how willing they were to do what was necessary to satisfy customers.

Third, one potential criticism of Studies 1–3 is common method variance; all of the measures came from the same source (self-reports). One rebuttal to the alternative explanation of common

Table 6
Results of Hierarchical Regression Analysis of OCB (Study 3)

	Organizational citizenship behavior		
	Step 1	Step 2	Step 3
Dependent variable			
Outcome fairness (OF)	.05	.06	.05
Procedural fairness (PF)	.12†	.12†	.11
Uncertainty (U)	-.22**	-.23**	-.15*
OF × PF		-.09†	-.10†
OF × U		-.02	-.01
PF × U		.01	.01
OF × PF × U			-.14*
<i>R</i> ²	.08	.09	.10
<i>R</i> _{adj} ²	.07	.07	.08
<i>R</i> _{change} ²		0	.01*
Overall <i>F</i>	9.32**	4.92**	4.81**
<i>df</i>	3, 312	6, 309	7, 308

† *p* < .10. * *p* < .05. ** *p* < .01.

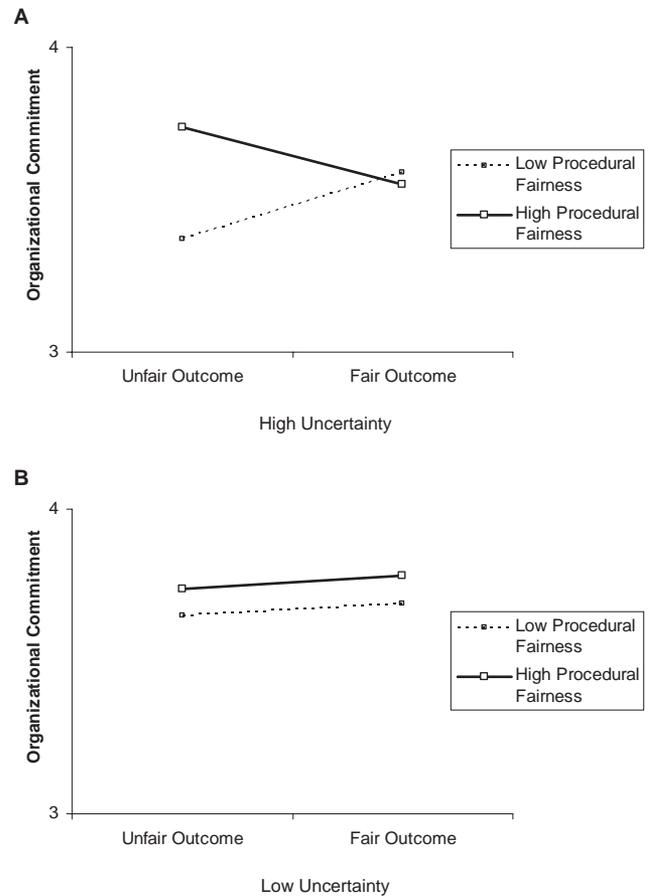


Figure 3. A: The effect of outcome fairness and procedural fairness on organizational commitment when uncertainty about standing is high (Study 3). B: The effect of outcome fairness and procedural fairness on organizational commitment when uncertainty about standing is low (Study 3).

method variance emanates from the somewhat complex nature of the results in Studies 1–3. That is, even though all of the variables were measured in the same way, it seems unlikely that common methods would account for the fact that the relationships between variables (e.g., the interactive effect of outcome fairness and procedural fairness on organizational commitment) were more pronounced under some conditions (when uncertainty was high) than others (when uncertainty was low; Evans, 1985). Nevertheless, it would still be worthwhile to test for the three-way interaction effect using a procedure devoid of common methods.

Accordingly, in Study 4 the independent variables of outcome fairness and procedural fairness were based on employees' self-reports, the independent variable of uncertainty was based on coworkers' reports, and the dependent variable of job performance was provided by employees' supervisors. As in Studies 1–3, we expected to find a three-way interaction effect, such that the interactive relationship between outcome fairness and procedural fairness will be stronger among those who were more uncertain about their standing as organizational members.

Method

Sample. A total of 367 working people from the United States (132 focal employees, 121 coworkers, and 114 supervisors) participated in the study. Participants came from organizations in a variety of different industries such as technology, government, insurance, financial, food service, retail, manufacturing, and medical. The average age of the focal employees was 23.8 years, and 49% of them were female. The focal employees were 4.6% African American, 6.1% Asian American, 69.5% Caucasian, 13.7% Hispanic, 3.1% biracial, and 3.1% other; and 30.5% worked full-time. The average age of coworkers was 29 years, and 50% of them were female. Coworkers were 5.8% African American, 7.4% Asian American, 66.9% Caucasian, 16.6% Hispanic, 2.5% biracial, and 0.8% other; 67.5% of them worked full-time. The average age of supervisors was 37 years, and 37% of them were female. Supervisors were 6.3% African American, 2.7% Asian American, 74.8% Caucasian, 12.6% Hispanic, 0.9% Native American, and 2.7% other; 97.3% worked full-time.

Procedure. A total of 288 junior- and senior-level undergraduate students from a large southeastern United States university were invited to participate; 132 of them did so (response rate was 45.8%). A snowballing method was used whereby students working at least 20 hr per week were asked to serve as the focal employee or to choose another working adult (i.e., a friend, family member, or colleague) to serve as the focal employee. This method was used so that we could avoid concerns over common methods

by having a coworker and a supervisor rate the focal employee on the relevant variables (Lee & Allen, 2002; Skarlicki & Folger, 1997). The focal employee, coworker, and supervisor surveys were administered online. Participants were required to provide information to their raters about the research project, including a link to the survey website. The focal employee was responsible for providing one coworker and one supervisor with a link to their respective surveys. Each respondent had a unique identification number to ensure anonymity and also to make sure that we could match the focal employee, coworker, and supervisor data. The focal employee completed measures of procedural fairness and outcome fairness, coworkers rated how uncertain they were about the focal employee's standing as an organizational member, and supervisors provided ratings of the focal employee's performance with customers.

Measures. All responses were made on a Likert-type scale with ratings from 1 (*strongly disagree*) to 7 (*strongly agree*).

Uncertainty about standing. Coworkers were asked to evaluate how certain or uncertain they perceived the focal employee's standing as an organizational member to be. Two items were asked: "I am certain that this employee matters in this organization," and "I am certain that this employee is valued in this organization." Responses were reverse-scored, such that higher scores reflected greater uncertainty.

Procedural fairness. Focal employees indicated the extent to which they perceived the organization's decision-making procedures to be fair; Colquitt's (2001) seven-item measure was used. Sample items included, "I have been able to express my views and feelings during the procedures" and "The procedures have been applied consistently."

Outcome fairness. Outcome fairness was based on Colquitt's (2001) four-item measure. Sample items included, "The outcomes reflect the effort I have put into my work" and "The outcomes are appropriate for the work I have completed."

Performance with customers. Employees' supervisors were asked to evaluate the extent to which they performed their jobs well in dealing with the customers of the organization. This measure was assessed with two items used previously by Bettencourt and Brown (1997; e.g., "This employee regularly performs all those tasks for customers that are required of him/her").

Results

Summary statistics for the study variables are displayed in Table 7. To test the hypothesized three-way interaction, we conducted a hierarchical regression analysis on the measure of performance with customers. In the first step we entered the main effects of the

Table 7
Summary Statistics (Study 4)

Variable	<i>M</i>	<i>SD</i>	Scale	1	2	3	4
1. Job performance	6.22	0.84	1–7	(.97)			
2. Procedural fairness	5.03	1.07	1–7	.15	(.91)		
3. Outcome fairness	4.99	1.42	1–7	.13	.50**	(.97)	
4. Uncertainty	1.91	1.22	1–7	–.32*	–.14	–.19*	(.90)

Note. *N* = 132. Alpha coefficients are displayed on the diagonal.

* *p* < .05. ** *p* < .01.

independent variables of procedural fairness, outcome fairness, and uncertainty. In the second step we entered all two-way interactions between the three independent variables, and in the third step we entered the three-way interaction. In accordance with Aiken and West (1991), procedural fairness, outcome fairness, and uncertainty were mean centered, and the interaction terms were calculated on the basis of these mean-centered scores.

Table 8 shows the regression results. As expected, the three-way interaction was significant ($\beta = -.34, p < .01$). As in the previous studies, to help illustrate the nature of the three-way interaction effect, we conducted simple slope analyses of the two-way interaction between procedural fairness and outcome fairness among those who were higher versus lower in uncertainty. The simple slope analyses showed that among those who were judged to be more uncertain about their standing as organizational members (one *SD* above the mean), the interaction between outcome fairness and procedural fairness was significant, and the sign of the simple slope was negative ($\beta = -.38, p < .05$). Thus, as can be seen in Figure 4A, among those who were judged to be more uncertain of their standing as organization members, procedural fairness was more positively related to customer performance when outcomes were more unfair. In contrast, among those employees who were judged to be less uncertain about their standing as organization members (one *SD* below the mean), the interaction between outcome fairness and procedural fairness was not significant ($\beta = .15, p > .05$), as shown in Figure 4B.³

General Discussion

Taken together, the findings of all four studies provided converging support for the notion that employees' uncertainty about their standing as organizational members influenced the magnitude of the process–outcome interaction found on system-referenced reactions, such that the interactive relationship originally shown by Folger and his colleagues (e.g., Folger et al., 1983) and conceptually replicated many times since (Brockner & Wiesenfeld, 1996) was more pronounced when uncertainty was relatively high. The consistency in results across studies is noteworthy in light of their

Table 8
Results of Hierarchical Regression Analysis of Job Performance (Study 4)

Dependent variable	Job performance		
	Step 1	Step 2	Step 3
Outcome fairness (OF)	.01	.03	.05
Procedural fairness (PF)	.11	.07	.00
Uncertainty (U)	-.29**	-.24*	-.18
OF × PF		-.03	-.03
OF × U		.00	-.10
PF × U		.23*	.15
OF × PF × U			-.34**
<i>R</i> ²	.11	.16	.23
<i>R</i> _{adj} ²	.08	.11	.18
<i>R</i> _{change} ²		.06	.07
Overall <i>F</i>	3.88*	3.04**	4.05**
<i>df</i>	3, 97	6, 94	7, 93

* *p* < .05. ** *p* < .01.

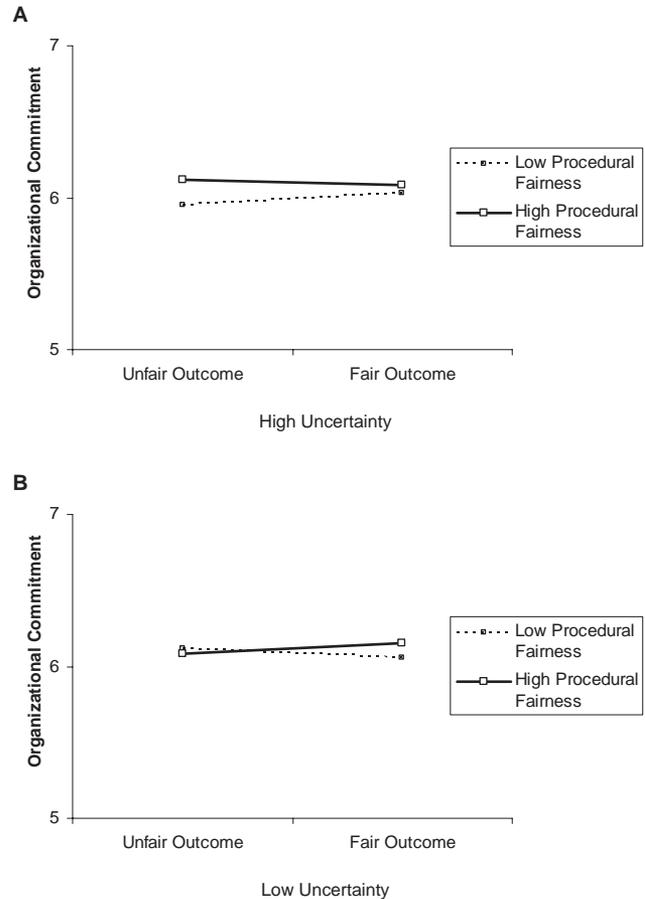


Figure 4. A: The effect of outcome fairness and procedural fairness on organizational commitment when uncertainty about standing is high (Study 4). B: The effect of outcome fairness and procedural fairness on customer performance when uncertainty about standing is low (Study 4).

many differences, including (a) the country in which the study was conducted (the Netherlands in Studies 1 and 3, Germany in Study 2, and the United States in Study 4); (b) the ways in which uncertainty was operationalized; and (c) the various measures of procedural fairness, outcome fairness, and system-referenced reactions. The fact that converging results emerged across studies differing in these and other ways bodes well for the construct validity and reliability of the findings.

³ Participants in Study 4 also completed a shortened version of the Allen and Meyer (1990) Affective Commitment scale. A hierarchical multiple regression analysis revealed a significant three-way interaction effect ($\beta = -.22, p < .05$), which took the same form as the one shown on the commitment measure in Studies 1 and 2: The interactive relationship between procedural fairness and outcome fairness, in which procedural fairness was more positively related to commitment when outcomes were relatively unfair, emerged to a greater extent when employees were more uncertain about their standing.

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Implications for Organizational Justice Theory and Research

Given the importance of the interactive relationship between procedural fairness and outcome fairness in the organizational justice literature (Colquitt et al., 2005), we need to better understand why and when it occurs and, relatedly, when it may not occur. Brockner and Wiesenfeld (1996) offered a sense-making interpretation of the interaction effect, speculating that the receipt of unfair outcomes is more likely to make people draw on and hence be influenced by procedural fairness information. Whereas the sense-making analysis set forth by Brockner and Wiesenfeld implied that the interactive relationship between procedural fairness and outcome fairness should be more likely to emerge when employees are more uncertain about their standing as organizational members, this hypothesis was never tested prior to the present studies.

Furthermore, more recent theory and research have specified the nature of the uncertainty that procedural fairness information is particularly well suited to address, which, in turn, is precisely the sort of uncertainty that is likely to moderate the interactive relationship between procedural fairness and outcome fairness. Procedural fairness conveys information about people's standing in organizations (De Cremer & Sedikides, 2008; Tyler, 1999; Van Prooijen et al., 2002), which has both economic significance (e.g., Thibaut & Walker, 1975) and psychological significance (e.g., De Cremer & Tyler, 2005). Thus, particularly in the face of unfair outcomes, people may be motivated to search for information (such as procedural fairness) that helps them make sense of their standing as organization members. If so, then the interaction between outcome fairness and procedural fairness should be especially pronounced when people are more uncertain about their standing as organization members, as it is precisely under such circumstances that they are more motivated to engage in sense-making.

The present studies also speak to the closely related question of when the interactive relationship between procedural fairness and outcome fairness may be unlikely to emerge. Whereas the process–outcome interaction has been found on many occasions, it has not always emerged (Brockner & Wiesenfeld, 1996). All of the present studies provided evidence of a significant three-way interaction between procedural fairness, outcome fairness, and uncertainty. However, the two-way interaction between procedural fairness and outcome fairness was not significant within any of the studies.

Why did the two-way interaction fail to emerge within each study? Although we can only speculate, one possible explanation is that the average or overall level of uncertainty across participants within each of the four studies may not have been high enough to elicit the kind of sense-making activity believed to underlie the two-way interaction between procedural fairness and outcome fairness. For example, in Study 1, in which length of tenure served as a proxy for uncertainty, participants had been members of their organizations for approximately 5 years on average. During this rather lengthy period of time they may have sufficiently reduced or managed much of the uncertainty they had about their standing as organizational members, such that they did not need to draw on procedural fairness information in response to unfair outcomes. Similarly, in Studies 2 and 3, the mean rating of uncertainty was 2.95 and 2.32, respectively, which was below the

midpoint on the 5-point uncertainty scale. Moreover, in Study 4, the mean level of uncertainty was even lower ($M = 1.91$ on a 7-point scale). Thus, in all four studies it is possible that the average level of uncertainty across all participants may not have been high enough to elicit the sense-making process that underlies the two-way interaction between procedural fairness and outcome fairness.⁴

Put differently, the process–outcome interaction only emerged in the present studies among the subset of participants who were more uncertain about their standing as organization members, as manifested in the predicted three-way interaction effect. However, there may not have been enough uncertainty for the sample as a whole to produce the oft-observed two-way interaction between procedural fairness and outcome fairness. This reasoning also may account for at least some of the previous failures to demonstrate a significant process–outcome interaction. Whereas we do not mean to suggest that a low level of uncertainty about standing is the only basis for failing to produce an interactive relationship between procedural fairness and outcome fairness, it is possible that participants in at least some of previous studies that failed to produce an interaction effect were not highly uncertain about their standing as organization members. For example, one such study was conducted by Dipboye and de Pontbriand (1981), who examined employees' satisfaction with their recent performance appraisals and with their organization's performance appraisal system as a function of the favorability of their appraisals and the procedural fairness with which their appraisals were conducted. Whereas relatively little information was provided in this brief report about the context in which the study was conducted, the authors did mention that participants had "1.5 or more years of service" (Dipboye & de Pontbriand, 1981, p. 248). Thus, as may have been the case in our Study 1, the length of tenure for most participants in the Dipboye and de Pontbriand study may have led them to not be highly uncertain about their standing as organization members.

Tyler and Caine (1981) also failed to find an interactive effect of outcome fairness and procedural fairness in two vignette studies in which participants indicated their satisfaction with decision-making authorities. Most of the participants in these studies were not organizational members. Rather, they were undergraduate students who were asked to describe their responses to a hypothetical situation varying in outcome fairness and procedural fairness. Given the context in which this study was conducted, it seems unlikely that participants were highly uncertain about their standing as organizational members.

Furthermore, almost all previous studies that tested for the process–outcome interaction examined the reactions of people who occupied a lower status position relative to the party who was delivering the outcome fairness and procedural fairness. Being in the lower status position may generally heighten people's uncer-

⁴ Whereas the two-way interaction between procedural fairness and outcome fairness was not significant within each of the four studies, it always took the same form as the one found in previous research (Brockner & Wiesenfeld, 1996). Moreover, a meta-analysis of the two-way interaction between procedural fairness and outcome fairness across the four present studies was significant ($z = 2.02, p < .05$). Thus, when considered as a set, the results of the present studies are in accordance with the previously observed process–outcome interaction.

tainty about their standing (although, as the present findings suggest, being in the lower status position does not ensure that people will be highly uncertain about their standing). Chen et al. (2003) found that when people were of equal status, outcome fairness and procedural fairness did not interact. However, Chen et al. did observe the typical interactive pattern when one participant was of lower status than the other party. Perhaps being of equal status led people to experience relatively low levels of uncertainty about their standing in relationship to the other party. Without being uncertain about their standing, they may have been less likely to engage in the sense-making process underlying the two-way interaction between procedural fairness and outcome fairness.

In summary, previous findings in which procedural fairness and outcome fairness did not interact may have come about under conditions in which people were not very uncertain about their standing as organizational members. Moreover, many of the previous field studies that did produce the two-way interaction between procedural fairness and outcome fairness were conducted in the context of significant organizational change (Brockner & Wiesenfeld, 1996), which may have generally heightened employees' uncertainty about their standing as organizational members. Our speculative conclusion, which needs to be evaluated in future research, is that the two-way interaction between procedural fairness and outcome fairness is predicated on participants in a given study experiencing reasonably high levels of uncertainty about their standing as organization members. In any event, the present research takes the important step of offering an informed conjecture about when and why the interactive relationship between procedural fairness and outcome fairness may fail to materialize.

Limitations

In noting some important limitations of the present studies, we also are offering suggestions for future research. First, the cross-sectional nature of the design in all four studies makes it difficult to draw causal inferences. Hence, future research needs to examine the three-way interaction between procedural fairness, outcome fairness, and uncertainty with research designs with greater internal validity, such as longitudinal field research or laboratory experiments.

Second, the ways in which we operationalized all of the independent and dependent variables warrant further discussion. For example, it is possible to question some of the measures of uncertainty, which were operationalized with a proxy in Study 1 and with peer reports (rather than with self-reports) in Study 4. However, even if the operationalizations of uncertainty in Studies 1 and 4 are flawed, they are flawed in different ways. As research methodologists have noted (Cook & Campbell, 1979), to the extent that similar results emerge across studies that are methodologically distinct from one another (including distinctions in the ways in which the methods are flawed), we gain greater confidence in the construct validity of the findings. Moreover, the measure of uncertainty about standing in Studies 2 and 3 was quite direct, and the results there were consistent with those found in the other studies.

Third, and on a closely related note, concerns may be raised about the fact that we used different measures of the other variables across the four studies. For example, the items used to measure procedural fairness and organizational commitment came from different scales that have been used (and, reassuringly, val-

idated) in their respective literatures. Note, however, that the use of different measures should be viewed as more of a concern prior to doing the studies than it is at this point, now that consistent results are in hand. That is, if we had found different or inconsistent results across the four studies, it would have been harder to know if the different findings were conceptually meaningful or if they were due to the fact that the constructs were measured in different ways. Given that the results were quite convergent across studies, however, there should be less concern with the fact that the constructs were measured in somewhat different ways across studies. Indeed, the consistency of the results across studies may help to allay potential concerns about the strength of the findings. Whereas the three-way interaction effect was significant in each study, it accounted for a relatively small amount of variance in some of them (e.g., 2% in Study 2 and 1% in Study 3). When results are statistically significant but relatively weak, it is particularly important that they be replicated, which was the case here.

Finally, and at a more conceptual level, further research is needed to delineate the factors underlying people's uncertainty about their standing as organization members. At the outset we suggested that the bases of people's concern about their standing may be economic and/or psychological. People may use procedural fairness information to make inferences about how much they may expect to receive their share of favorable outcomes over time (Thibaut & Walker, 1975). Moreover, they may use procedural fairness information to make judgments about the extent to which they are viewed positively by organizational authorities (Tyler & Lind, 1992). At this point, we are unable to say whether the present findings were driven by people's concerns about economic considerations, psychological considerations, or a combination of the two. These are important matters to address in future research.

Practical Implications

Organizations and their authorities typically benefit when their employees respond positively on various system-referenced attitudes and behaviors, such as organizational commitment (Studies 1, 2, and 4), organizational citizenship behavior (Study 3), and job performance (Study 4). Thus, an ongoing challenge for managers is how to elicit such favorable reactions. Moreover, sometimes managers face tough decisions in which some or many employees receive outcomes perceived to be unfair or unfavorable. Another way to depict the interactive relationship between procedural fairness and outcome fairness is that higher levels of procedural fairness reduce the effect of outcome fairness on employees' system-referenced reactions relative to when procedural fairness is low. Thus, there may be an economically cost-effective way for managers to elicit favorable work attitudes and behaviors, particularly when implementing tough decisions (Lind, Greenberg, Scott, & Welchans, 2000). After all, in many if not most instances the financial costs for managers to be procedurally fair are rather low. It usually does not cost a lot of money to give employees input into how to plan or implement decisions, even those that may produce unfair or unfavorable outcomes for at least some of them. Nor does it cost much money to express concern for people who lose their jobs as a result of a layoff or to explain the reasons for a pay cut (Greenberg, 1990). This is not to say that in attempting to manage employees' system-referenced reactions, managers can

or should eschew outcome fairness and instead focus entirely on procedural fairness. Whereas high procedural fairness may reduce the effect of outcome fairness on employees' system-referenced reactions, it does not always eliminate it. Moreover, if the high procedural fairness is perceived to be inauthentic, it is unlikely to be effective in reducing the impact of outcome fairness.

The present findings add yet another consideration for managers as they contemplate how to leverage procedural fairness and outcome fairness as determinants of system-referenced reactions: the degree to which employees are uncertain about their standing as organization members. We found that high procedural fairness may or may not reduce the impact of outcome fairness relative to when procedural fairness is low. All four studies showed that high procedural fairness reduced the effect of outcome fairness on employees' reactions only among those who were relatively uncertain about their standing as organization members. Thus, managers would be well advised to take their employees' level of uncertainty about their standing as organization members into account before deciding upon the relative emphasis they place on procedural fairness and outcome fairness as strategies for gaining their employees' support. When employees are relatively uncertain about their standing (e.g., if they are new to the organization or if the organization is in the process of a major transformation), then managers may wish to place greater emphasis on procedural fairness as a means to elicit favorable attitudes and behaviors in their employees, given the present findings that high procedural fairness reduced the impact of outcome fairness on system-referenced reactions among those higher in uncertainty.

However, when employees are less uncertain, it may be less effective for managers to place greater emphasis on procedural fairness than on outcome fairness. That is, all four studies showed that when uncertainty was low, high procedural fairness did not reduce the effect of outcome fairness on employees' attitudes and behaviors, relative to when procedural fairness was low. In conclusion, we are not advocating that managers should emphasize procedural fairness to the exclusion of outcome fairness (or vice versa) in attempting to produce more favorable system-referenced reactions. Rather, as the present findings suggest, the relative emphasis that they place on these two dimensions should be guided by informed estimates of their employees' degree of uncertainty about their standing as organization members.

References

- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. New York, NY: Sage.
- Allen, N. J., & Meyer, J. P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organization. *Journal of Occupational Psychology*, *63*, 1–18.
- Ashford, S. J., & Black, J. S. (1996). Proactivity during organizational entry: The role of desire for control. *Journal of Applied Psychology*, *8*, 199–214.
- Bauer, T. N., & Green, S. G. (1994). Effect of newcomer involvement in work-related activities: A longitudinal study of socialization. *Journal of Applied Psychology*, *79*, 211–223.
- Becker, T. E., & Billings, R. S. (1993). Profiles of commitment: An empirical test. *Journal of Organizational Behavior*, *14*, 177–190.
- Bettencourt, L. A., & Brown, S. W. (1997). Contact employees: Relationships among workplace fairness, job satisfaction and prosocial service behaviors. *Journal of Retailing*, *73*, 39–61.
- Brislin, R. W. (1980). Translation and content analysis of oral and written material. In H. C. Triandis & J. W. Berry (Eds.), *Handbook of cross-cultural psychology* (pp. 398–444). Boston, MA: Allyn & Bacon.
- Brockner, J., Heuer, L. B., Magner, N., Folger, R., Umphress, E., Van den Bos, K., . . . Siegel, P. A. High procedural fairness heightens the effect of outcome favorability on self-evaluations: An attributional analysis. *Organizational Behavior and Human Decision Processes*, *91*, 51–68.
- Brockner, J., & Wiesenfeld, B. M. (1996). An integrative framework for explaining reactions to decisions: Interactive effects of outcomes and procedures. *Psychological Bulletin*, *120*, 189–208.
- Chen, Y., Brockner, J., & Greenberg, J. (2003). When is it “a pleasure to do business with you”? The effects of status, outcome favorability, and procedural fairness. *Organizational Behavior and Human Decision Processes*, *92*, 1–21.
- Colquitt, J. A. (2001). On the dimensionality of organizational justice: A construct validation of a measure. *Journal of Applied Psychology*, *86*, 386–400.
- Colquitt, J. A., Greenberg, J., & Zapata-Phelan, C. P. (2005). What is organizational justice? A historical overview. In J. Greenberg & J. A. Colquitt (Eds.), *Handbook of organizational justice* (pp. 3–56). Mahwah, NJ: Erlbaum.
- Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis for field settings*. Chicago, IL: Rand McNally.
- Curley, S. P., Yates, J. F., & Abrams, R. A. (1986). Psychological sources of ambiguity avoidance. *Organizational Behavior and Human Decision Processes*, *38*, 230–256.
- De Cremer, D., Brebels, L., & Sedikides, C. (2008). Being uncertain about what? Procedural fairness effects as a function of general uncertainty and belongingness uncertainty. *Journal of Experimental Social Psychology*, *44*, 1520–1525.
- De Cremer, D., & Sedikides, C. (2005). Self-uncertainty and responsiveness to procedural justice. *Journal of Experimental Social Psychology*, *4*, 157–173.
- De Cremer, D., & Sedikides, C. (2008). Reputational implications of procedural fairness for personal and relational self-esteem. *Basic and Applied Social Psychology*, *30*, 66–75.
- De Cremer, D., & Tyler, T. R. (2005). Managing group behavior: The interplay between procedural fairness, self, and cooperation. In M. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 37, pp. 151–218). New York, NY: Academic Press.
- Deutsch, M. (1985). *Distributive justice: A social psychological perspective*. New Haven, CT: Yale University Press.
- Dipboye, R. L., & de Pontbriand, R. (1981). Correlates of employee reactions to performance appraisals and appraisal systems. *Journal of Applied Psychology*, *66*, 248–251.
- Dykman, B. J. (1998). Integrating cognitive and motivational factors in depression: Initial tests of a goal-oriented approach. *Journal of Personality and Social Psychology*, *74*, 139–158.
- Evans, M. G. (1985). A Monte Carlo study of the effects of correlated method variance in moderated multiple regression analysis. *Organizational Behavior and Human Decision Processes*, *36*, 305–323.
- Folger, R., & Cropanzano, R. (1998). *Organizational justice and human resource management*. Thousand Oaks, CA: Sage.
- Folger, R., & Konovsky, M. A. (1989). Effects of procedural and distributive justice on reactions to pay raise decisions. *Academy of Management Journal*, *32*, 115–130.
- Folger, R. D., Rosenfield, D., Grove, J., & Corkran, L. (1979). Effects of voice and peer opinions on responses to inequity. *Journal of Personality and Social Psychology*, *37*, 2253–2261.
- Folger, R. D., Rosenfield, D., & Robinson, T. (1983). Relative deprivation and procedural justification. *Journal of Personality and Social Psychology*, *45*, 268–273.
- Greenberg, J. (1990). Organizational justice: Yesterday, today, and tomorrow. *Journal of Management*, *16*, 399–432.

- Greenberg, J., & Colquitt, J. A. (2005). *Handbook of organizational justice*. Mahwah, NJ: Erlbaum.
- Kramer, R. M. (2001). Identity and trust in organizations: One anatomy of a productive but problematic relationship. In M. A. Hogg & D. J. Terry (Eds.), *Social identity processes in organizational contexts* (pp. 167–180). Philadelphia, PA: Psychology Press.
- Lee, K., & Allen, N. J. (2002). Organizational citizenship behavior and workplace deviance: The role of affect and cognitions. *Journal of Applied Psychology, 87*, 131–142.
- Leventhal, G. S., Karuza, J., & Fry, W. R. (1980). Beyond fairness: A theory of allocation preferences. In G. Mikula (Ed.), *Justice and social interaction* (pp. 167–218). New York, NY: Springer-Verlag.
- Lind, E. A., & Tyler, T. R. (1988). *The social psychology of procedural justice*. New York, NY: Plenum Press.
- Lind, E. A., Greenberg, J., Scott, K. S., & Welchans, T. D. (2000). The winding road from employee to complainant: Situational and psychological determinants of wrongful termination claims. *Administrative Science Quarterly, 45*, 557–590.
- McFarlin, D. B., & Sweeney, P. D. (1992). Distributive and procedural justice as predictors of satisfaction with personal and organizational outcomes. *Academy of Management Journal, 35*, 626–637.
- Moorman, R. H. (1991). Relationship between organizational justice and organizational citizenship behaviors: Do fairness perceptions influence employee citizenship? *Journal of Applied Psychology, 76*, 845–855.
- Moorman, R. H., & Blakely, G. L. (1995). Individualism–collectivism as an individual difference predictor of organizational citizenship behavior. *Journal of Organizational Behavior, 16*, 127–142.
- Organ, D. W. (1988). *Organizational citizenship behavior: The good soldier syndrome*. Lexington, MA: Lexington Books.
- Price, J. L., & Mueller, C. W. (1986). *Handbook of organizational measurement*. Marshfield, MA: Pitman.
- Skarlicki, D. P., & Folger, R. (1997). Retaliation in the workplace: The roles of distributive, procedural, and interactional justice. *Journal of Applied Psychology, 82*, 434–443.
- Thibaut, J. W., & Walker, L. (1975). *Procedural justice: A psychological analysis*. Hillsdale, NJ: Erlbaum.
- Tyler, T. R. (1999). Why people cooperate with organizations: An identity-based perspective. In R. I. Sutton & B. M. Staw (Eds.), *Research in organizational behavior* (Vol. 21, pp. 201–246). Greenwich, CT: JAI Press.
- Tyler, T. R., & Caine, A. (1981). The influence of outcomes and procedures on satisfaction with formal leaders. *Journal of Personality and Social Psychology, 41*, 642–655.
- Tyler, T. R., & Lind, E. A. (1992). A relational model of authority in groups. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 25, pp. 115–191). New York, NY: Academic Press.
- Van den Bos, K., & Lind, E. A. (2002). Uncertainty management by means of fairness judgments. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 34, pp. 1–60). San Diego, CA: Academic Press.
- Van Prooijen, J.-W., Van den Bos, K., & Wilke, H. A. M. (2002). Procedural justice and status: Status salience as antecedent of procedural fairness effects. *Journal of Personality and Social Psychology, 83*, 1353–1361.
- Wong, P. T., & Weiner, B. (1981). When people ask “why” questions, and the heuristics of attributional search. *Journal of Personality and Social Psychology, 40*, 650–663.

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