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Cognitive Processes in Procedural Justice Judgments.  
The Role of Ease-of-Retrieval, Uncertainty, and Experience

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### Abstract

In a field experiment with 517 job applicants, the processes underlying the formation of procedural justice judgments were investigated. It was hypothesized that procedural justice judgments may be based not only on content information (e.g., "What are fair aspects of the selection procedure?"), but also on the felt ease or difficulty with which this content information can be retrieved from memory (ease-of-retrieval; e.g., "How easily can I recall fair aspects of the selection procedure?"). Evaluations of the company's online application procedure show that job candidates based procedural justice judgments on content information or on ease-of-retrieval, depending on their uncertainty regarding the online application procedure as well as their prior experiences with online applications. Specifically, experienced applicants who felt certain based their judgments on ease-of-retrieval, whereas all other applicants based their judgments on content information. Implications for research on the formation of justice judgments as well as practical applications are discussed.

Word count: 150

Keywords: Procedural Justice, Ease-of-Retrieval, Uncertainty, Experience, Applicant

Reactions

Cognitive Processes in Procedural Justice Judgments. The Role of Ease-of-Retrieval,  
Uncertainty, and Experience

How do individuals form procedural justice judgments? Research addressing this question has long focused on the role of content available at the time of judgment, suggesting that individuals form procedural justice judgments by integrating information such as features of the process itself (e.g., Ambrose & Kulik, 2001; Gilliland, 1993; Leventhal, 1980; Thibaut & Walker, 1975; Van den Bos & Lind, 2002). However, judgments may be formed not only on the basis of content information, but also on the basis of the ease or difficulty associated with the retrieval of information from memory (ease-of-retrieval; see Schwarz, 1998, 2004; Schwarz & Clore, 2007; Tversky & Kahneman, 1973). For instance, Wänke, Bohner, and Jurkowitsch (1997) reported that car brand evaluations are influenced by the ease or difficulty with which information regarding the brands can be retrieved from memory. Ease-of-retrieval thus constitutes a powerful source of information per se, and individuals may use this information in addition to, or instead of, content information to form judgments. While the important role of ease-of-retrieval is by now well recognized in the realm of social cognition, it has received less attention in the domain of justice.

This study seeks to extend prior research in the domain of procedural justice by suggesting that procedural justice judgments may be based not only on content information, but also on the ease or difficulty with which information is retrieved from memory. We report a field study conducted in the context of personnel selection. Specifically, we hypothesize that job applicants may base procedural justice judgments on different sources of information, namely (1) *content information*, i.e. the content of information that was recalled and is available at the time of judgment (e.g., “What are fair aspects about the selection procedure?”), and (2) *ease-of-retrieval*, i.e. the felt ease or difficulty with which this information could be brought to mind (e.g., “How easily can I recall fair aspects of the selection procedure?”). Since ease-of-retrieval is a readily accessible and generally valid

source of information (cf., Schwarz, 2004; Schwarz, Song, & Xu, 2008), judgment mechanisms based on ease-of-retrieval are likely to be efficient and sensible ways to form justice judgments.

In addition, this study will explore when individuals rely on content information and when they rely on ease-of-retrieval. Both *situational* variables—uncertainty in an application procedure—and *individual* characteristics—experience with application procedures—were investigated as potential moderating variables. To test these assumptions, a field experiment was conducted examining how job applicants form procedural justice judgments about an application procedure.

In what follows, we first provide a brief overview of the role of justice perceptions in personnel selection. We then elaborate on content and ease-of-retrieval as sources of information in judgment formation. Finally, we hypothesize that both uncertainty and experience moderate the use of content and ease-of-retrieval in justice judgments.

### *Justice in Personnel Selection*

Perceptions of justice have been shown to affect a multitude of key organizational outcomes (for meta-analytic reviews, see Cohen-Charash & Spector, 2001; Colquitt, Conlon, Wesson, Porter, & Ng, 2001). Specifically, a process, outcome, or interaction which is perceived as fair is likely to result in desirable attitudes and behaviors towards the organization, such as organizational commitment (e.g., Ambrose & Schminke, 2009; Simons & Roberson, 2003), organizational identification (e.g., De Cremer & Blader, 2006; Olkkonen & Lipponen, 2006), performance (e.g., Ambrose & Schminke, 2009; Konovsky & Cropanzano, 1991), and job satisfaction (e.g., Ambrose & Cropanzano, 2003; Clay-Warner, Reynolds, & Roman, 2005). This positive effect of perceived justice not only holds for organizational settings in general, but also for the personnel selection context in particular. For instance, in his theoretical framework on applicants' reactions, Gilliland (1993) proposes that justice perceptions of a selection procedure (i.e., procedural justice) are based on formal

characteristics of the selection procedure (e.g., opportunity to perform), explanation of the procedures (e.g., honesty), and interpersonal treatment (e.g., propriety of questions).<sup>1</sup>

Perceptions of the just distribution of outcomes (i.e., distributive justice) are based on considerations of equity of outcomes, equality of outcomes, and need for outcomes.

Perceptions of both procedural and distributive justice have an impact on outcomes during the selection process (e.g., the decision to accept a job offer), outcomes after the selection process (e.g., job performance), and self-related perceptions (e.g., self-esteem). In support of this model, studies on applicants' reactions show that perceptions of the justice of the selection procedure are positively related to important organizational outcomes (for overviews, see Hausknecht, Day, & Thomas, 2004; Ryan & Ployhart, 2000), such as satisfaction with the job and the organization (e.g., Macan, Avedon, Paese, & Smith, 1994), performance (e.g., Gilliland, 1994; Van Vianen, Taris, Scholten, & Schinkel, 2004), job acceptance intentions (e.g., Bauer, Truxillo, Paronto, Weekley, & Campion, 2004; Ployhart & Ryan, 1997), recommendation intentions (e.g., Bauer, Maertz, Dolen, & Campion, 1998; Gilliland, 1994; Ployhart & Ryan, 1997; Truxillo, Bauer, Campion, & Paronto, 2002), attraction of the job or the organization (e.g., Bauer et al., 1998; Bauer et al., 2004; Truxillo et al., 2002; Van Vianen et al., 2004), and lower litigation intentions (e.g., Bauer et al., 2001; Wallace, Page, & Lippstreu, 2006). Organizations are accordingly well advised to make justice a major concern for human resource management (e.g., Cropanzano, Bowen, & Gilliland, 2007).

Given the strong influence of perceived justice on central organizational outcomes, it is important to understand how justice judgments are formed and which factors influence the judgment formation process. This knowledge may then help in better comprehending and predicting individuals' justice-related attitudes and behavior. The present study offers one step in this direction by collecting data in a personnel selection context. Of particular concern in this domain are justice concerns with respect to the procedures employed, i.e. procedural justice perceptions (cf., Lind, Kray, & Thompson, 2001; Van den Bos, Vermunt, & Wilke,

1997a). What follows will delineate how content and ease-of-retrieval can influence procedural justice judgments.

### *The Role of Content in the Formation of Procedural Justice Judgments*

Most models of the formation of procedural justice judgments focus on *content* information accessible at the time of judgment. According to such content-based justice models, individuals are concerned with the question “What are fair aspects of the process?” when evaluating the justice of a procedure. For instance, Thibaut and Walker (1975) argue that characteristics of a process (e.g., whether opinions can be voiced) determine whether a person judges the process as fair or unfair. According to Leventhal (1980) and Leventhal, Karuza, and Fry (1980), a process is perceived as fair if specific rules of procedural justice (namely consistency, bias-suppression, accuracy, correctability, representativeness, and ethicality) are followed. Similarly, Gilliland (1993) proposes in his fairness model of applicants’ reactions that individuals evaluate the justice of a selection procedure by comparing the characteristics of the procedure with certain rules of procedural justice (namely job relatedness, opportunity to perform, opportunity for reconsideration, consistency of administration, feedback, selection information, honesty, interpersonal effectiveness of the administrator, two-way communication, and propriety of questions). Other models assume that procedural justice judgments are generated by comparing characteristics of the procedure with prototypical fair and unfair procedures (Ambrose & Kulik, 2001). All these models share the assumption that characteristics of the procedure are the central determinants of procedural justice judgments. Hence, they all assume that procedural justice judgments are generated on the basis of content information.

It should be noted that integration of thought content does not necessarily result in accurate judgments, as it has been shown that judgment formation often does not follow the ideal of a ‘computational person’ who flawlessly integrates all relevant pieces of information in weighted averages (e.g., Wyer & Srull, 1989). Rather, judgment formation is often biased

by a truncated search process (e.g., Wyer & Carlston, 1979) or by situational variables, such as which specific piece of information is currently salient in a given judgment situation (e.g., Taylor & Fiske, 1978). Evidence that relying on thought content is not necessarily the *via regia* has spurred interest in other sources of information, such as ease-of-retrieval, to which we turn next.

### *The Role of Ease-of-Retrieval in the Formation of Procedural Justice Judgments*

Over the last three decades, research on human judgment and information processing has demonstrated that “there is more to thinking than thought content” (Schwarz, 2004, p. 332). Specifically, it has been shown that judgments may not only be based on content information, but also on so-called “*cognitive feelings*,” including ease-of-retrieval. A prime example of cognitive feelings known to most individuals is the tip-of-the-tongue phenomenon: individuals *feel* the presence of some information in memory, without being currently able to access it (Schwarz, 2002). Another well-known example is the feeling of familiarity (e.g., Jacoby & Dallas, 1981): individuals *feel* they have encountered some person or object before, but are currently unable to specify this encounter. To illustrate, imagine riding on a bus and having the pressing feeling of having previously met the person sitting next to you (he or she *feels* familiar); yet you don’t remember that this is the clerk from the local supermarket. Notably, in both examples, content information is currently not accessible, but its presence can be *felt*. Accordingly, such phenomena are referred to as *feelings* because they are felt much as affective feelings (e.g., emotions or moods) or bodily feelings (e.g., hunger, pain or arousal) can be felt (e.g., Clore, 1992; Schwarz & Clore, 2007). And they are called *cognitive* because they result from cognitive processing, like reading, understanding, or recalling. Other cognitive feelings are those of amazement, boredom, or knowing (see Schwarz & Clore, 2007). Perhaps the most prominent cognitive feelings in social cognition research are feelings of ease or difficulty associated with the retrieval of information from memory, which we will refer to as *ease-of-retrieval* (Schwarz, 2004) and address below.

Tversky and Kahneman (1973) were first to suggest that individuals use ease-of-retrieval to form judgments. In a set of experiments, the authors demonstrated that individuals judge the frequency or likelihood of events based on the ease or difficulty with which pertinent examples could be brought to mind: Individuals did not use the retrieved examples themselves to form judgments, but rather the felt ease-of-retrieval associated with the retrieval process. This notion was further supported by Schwarz and colleagues (1991). Participants were asked to recall either 6 or 12 examples of their own assertive behavior, then rated their own assertiveness. Recalling 6 examples felt easy, whereas recalling 12 examples felt difficult. Notably, participants who had recalled 12 examples of assertive behavior rated themselves as *less* assertive than participants who had recalled 6 examples. Presumably, individuals inferred from the *ease* of recalling 6 examples that there were many examples of assertive behavior in their past, which encouraged belief in their own assertiveness. By contrast, individuals presumably inferred from the *difficulty* of recalling 12 examples that there were only a few examples of assertive behavior in their past, which caused them to doubt their own assertiveness. Note that if participants had used the recalled *content* to form judgments (instead of ease-of-retrieval), they would have rated themselves as *more* assertive (rather than less) after recalling 12 as opposed to 6 examples, since—from the perspective of content-based judgment formation—12 examples should influence the judgment more strongly than 6, as 12 is more than 6. The methodological paradigm of asking participants to recall a few versus many pieces of information (hereafter referred to as the ease-of-retrieval paradigm) thus allows for determining whether individuals use content or ease-of-retrieval to form judgments. Presumably this property made the paradigm popular in social cognitive research (for reviews, see Schwarz, 1998; Schwarz, 2004).

Since the initial work by Tversky & Kahneman (1973), ease-of-retrieval has been shown to influence a wide range of judgments. For instance, judgments about the self (e.g., Greifeneder & Bless, 2008; Raghurir & Menon, 1998) or others (e.g., Dijksterhuis, Macrae,

& Haddock, 1999; Haddock, 2002) are more positive when positive self- or other-relevant information can be retrieved easily. That is, it is not the content of the retrieved self- or other-relevant information that influences judgments, but the ease or difficulty associated with the retrieval of this information. Similarly, judgments about objects have been shown to reflect the ease or difficulty with which relevant pieces of information can be brought to mind (e.g., Menon & Raghurir, 2003; Novemsky, Dhar, Schwarz, & Simonson, 2007; Wänke et al., 1997). And even abstract concepts such as attitude strength (e.g., Haddock, Rothman, Reber, & Schwarz, 1999; Wänke, Bless, & Biller, 1996) or memory performance (Benjamin, Bjork, & Schwartz, 1998; Winkielman, Schwarz, & Belli, 1998) are strongly influenced by ease-of-retrieval. Finally, recent research suggests that procedural justice judgments may be influenced by ease-of-retrieval as well (Müller, Greifeneder, Stahlberg, Van den Bos, & Bless, 2010).

Presumably, procedural justice judgments may be influenced by ease-of-retrieval because individuals spontaneously ask themselves “How easily can I recall aspects of the procedure?” Individuals may then use this assessment of their feelings as information to form a justice judgment. For instance, if participants are asked to recall aspects of a procedure which are unfair, and if recalling such aspects is easy (for example because participants are asked to recall only a few unfair aspects), individuals will likely infer that there are many unfair aspects and will conclude that the procedure cannot be fair. In contrast, if recalling unfair aspects feels difficult (for example because participants are asked to recall a large number of unfair aspects), individuals will likely infer that there are not many unfair aspects and will conclude that the procedure is probably fair. Hence, when relying on ease-of-retrieval, individuals who recall few unfair aspects of a procedure should evaluate the process as *less* fair than individuals who recall many unfair aspects—a seemingly counterintuitive prediction at first sight.

In order to test these conjectures, Müller and colleagues (2010, Experiment 1) asked students in a laboratory experiment to list either a few (two) or many (four) unfair aspects of the selection procedure of an institution that assigns prospective students to a limited number of university places. Importantly, following the logic of Schwarz and colleagues' (1991) ease-of-retrieval paradigm, the number of aspects was selected and pretested such that naming a few unfair aspects was easy, whereas naming many unfair aspects was difficult. Participants who named many unfair aspects rated the procedure as less unfair than participants who named a few unfair aspects, presumably reflecting reliance on ease-of-retrieval in forming justice judgments. Specifically, the felt ease of recalling only a few unfair aspects may have suggested there were many unfair aspects and that the procedure therefore could not be fair, whereas the felt difficulty of recalling many unfair aspects may have suggested there were only a few unfair aspects and that the procedure was therefore fair. In support of these conclusions, Müller and colleagues (2010) reported that justice judgments are correlated with perceived ease-of-retrieval, suggesting that ease-of-retrieval was used as information when forming justice judgments. Moreover, by analyzing the recalled content information the authors refuted alternative process explanations, such as reliance on content or biased content recall. Hence, and in accordance with a host of conceptually similar findings in other domains (for reviews, see Schwarz, 1998, 2004), the results observed by Müller and colleagues (2010) offer initial evidence for the notion that ease-of-retrieval can be a significant source of information in the formation of procedural justice judgments. However, as the study by Müller and colleagues (2010)—like most other research on ease-of-retrieval—was conducted in the laboratory, it is currently unclear whether individuals in field settings would also form procedural justice judgments based on ease-of-retrieval.

Extending prior research, the aim of the current study was threefold. First, the study was designed to investigate whether ease-of-retrieval effects also occur outside the laboratory. Because laboratory settings are designed to explicitly elicit and maximize effects, it is much

less clear on which sources of information individuals will draw in the field. Given that justice concerns play a major role in organizational life, conducting a field experiment on ease-of-retrieval effects might be particularly interesting in the context of justice judgments and would make a contribution to the scarce literature in this domain. Second, justice and injustice are not the same constructs (e.g., Folger, 1984; Lupfer, Weeks, Doan, & Houston, 2000; Mikula, Petri, & Tanzer, 1990; Van den Bos & Van Prooijen, 2001). It is therefore not clear whether recalling fair versus unfair aspects leads to analogous results. The study by Müller and colleagues (2010) focussed on negative valence: participants were asked to retrieve *unfair* (= negative) aspects. The present study is intended to complement that research by examining whether feelings of ease-of-retrieval influence procedural justice perceptions when the valence of recalled information is positive. Therefore, participants in this study were asked to retrieve few versus many *fair* (= positive) aspects of a selection procedure. Finally, the interplay of two potential moderating variables was investigated to determine *when* individuals may be expected to form justice judgments based on content or ease-of-retrieval. These variables were uncertainty and prior experience, and their expected impact on the use of ease-of-retrieval is described below.

#### *Uncertainty as a Moderator of Ease-of-retrieval effects*

Several factors which moderate the reliance on content information versus ease-of-retrieval in judgment formation have been identified, including processing intensity (i.e. individuals' capacity or motivation to process relevant information; e.g., Greifeneder & Bless, 2007; Rothman & Schwarz, 1998), mood (e.g., Ruder & Bless, 2003), and experience (e.g., Tybout, Sternthal, Malaviya, Bakamitsos, & Park, 2005, see below). Adding to this list, and in line with Müller and colleagues (2010), we suggest that *uncertainty* may also influence whether people rely on ease-of-retrieval or content information when forming procedural justice judgments.

Uncertainty can be defined as an individual's "inability to assert with certainty one or more of the following: (a) act-event sequences; (b) event-event sequences; (c) value of consequences; (d) appropriate decision process; (e) future preferences and actions; (f) one's ability to affect future events" (Lipshitz & Strauss, 1997, p. 150; based on Humphreys & Berkeley, 1985). Importantly, uncertainty plays a critical role in selection contexts. Application processes are often characterized by high levels of ambiguity, perceived lack of information, unknown results of the application, and unspecific job descriptions (e.g., Bell, Ryan, & Wiechmann, 2004; Shapiro & Kirkman, 2001; Truxillo, Steiner, & Gilliland, 2004). For example, it is often unclear whether one's qualifications are sufficient, which types of tests have to be taken, how many people will be present at the interview, what exactly the selection criteria are, how many other candidates applied for the same position, how many steps are included in the selection procedure, when the selection decision will be communicated, or why the decision was positive or negative. These aspects potentially foster applicants' uncertainty during the selection procedure.

Why should uncertainty moderate reliance on ease-of-retrieval? The uncertainty management model (Lind & Van den Bos, 2002; Van den Bos & Lind, 2002) holds that justice information provides a way to cope with uncertainty. Accordingly, justice-related information is particularly relevant under conditions of uncertainty. A substantial body of empirical studies provides support for this assumption (e.g., De Cremer & Sedikides, 2005; Diekmann, Barsness, & Sondak, 2004; Elovainio et al., 2005; Kausto, Elo, Lipponen, & Elovainio, 2005; Tangirala & Alge, 2006; Thau, Aquino, & Wittek, 2007; Van den Bos, 2001a). For example, Diekmann and colleagues (2004) showed that employees who were uncertain about performance standards and appropriate behavior were more sensitive with regard to fairness issues when compared to employees who were more certain. Similarly, Thau and colleagues (2007) demonstrated that employees who felt uncertain reacted more

strongly to perceived injustice and showed more antisocial work behaviors than employees who felt more certain.

How may uncertainty influence the use of content information versus ease-of-retrieval in procedural justice judgments? According to dual-process models of judgment formation (such as the heuristic-systematic model, see Chaiken, Liberman, & Eagly, 1989; Chen & Chaiken, 1999), individuals engage in effortful systematic information processing and rely on content information when a judgment is relevant to them. This is because when something is of relevance, individuals strive to process related information and are willing to invest in an elaborate judgment process. Conversely, individuals engage in less effortful heuristic information processing and often rely on non-taxing judgmental short-cuts, such as ease-of-retrieval, when a judgment is less relevant to them. This is because when something is of low relevance, individuals are less motivated to invest in an extensive and possibly effortful judgment formation (see also Aarts & Dijksterhuis, 1999; Rothman & Schwarz, 1998).

Given that justice judgments are particularly relevant for individuals who feel uncertain but are less relevant for those who feel certain (Van den Bos & Lind, 2002), we argue that individuals who are uncertain rely on content information to form justice judgments, whereas individuals who are less uncertain rely on ease-of-retrieval. In line with this assumption, Tiedens & Linton (2001) demonstrated that systematic processing (e.g., reliance on content information) is more likely under conditions of uncertainty, while heuristic processing (e.g., reliance on ease-of-retrieval) is more likely under conditions of certainty. Thus, we hypothesize that uncertainty determines how individuals process justice-related information and on which type of information they base their justice judgments. In particular, we propose that certainty fosters reliance on ease-of-retrieval, whereas uncertainty fosters reliance on content information. In the current study uncertainty was operationalized via applicants' uncertainty during the selection procedure due to a subjective perceived

shortage of information. As noted above, uncertainty is a relevant factor in the selection context and should therefore be a relevant variable in the present study.

#### *Experience as a Moderator of the Reliance on Ease-of-Retrieval*

Apart from factors induced by the situation (e.g., the selection process), individual characteristics may also influence how information is processed and how justice judgments are formed. In this respect, the *experience* an individual has in a specific judgment domain has been shown to moderate the reliance on ease-of-retrieval. For instance, Tybout et al. (2005) showed that individuals rely on ease-of-retrieval only at medium levels of experience. Presumably, this is because ease-of-retrieval has been shown to influence judgments only when it is perceived as diagnostic, that is, when it has informational value for the judgment (for reviews, see Schwarz, 1998, 2004). When ease-of-retrieval is perceived as non-diagnostic, it is not considered a valuable source of information and is therefore discarded (e.g., Schwarz et al., 1991). Consider a person who is moderately experienced and has some (i.e., neither very little nor very much) knowledge in a certain domain. In this case, recalling specific aspects normally feels neither particularly easy nor particularly difficult. However, when recall feels easy or difficult, this deviates from what can naturally be expected at a medium level of experience, rendering perceptions of recall ease and recall difficulty informative for the judgment.

Intriguingly, this changes considerably when one either knows very little or very much about a certain topic. When the level of experience in a specific domain is low, recalling both few and many instances of an event is difficult, and hence difficulty of recall is not a diagnostic piece of information. In contrast, if the level of experience is high, recalling both few and many aspects of an event is easy, and hence ease of recall is not a diagnostic piece of information. Thus, when the level of experience is either low or high, the informational value of ease-of-retrieval may be questioned. Hence, at low or high levels of experience, judgments should not, or not so much, be influenced by ease-of-retrieval.

Tybout et al. (2005) provide support for this reasoning in a series of studies. In one of their experiments, the authors asked participants from the US to evaluate cars about which they had little (Hyundai) or moderate knowledge (BMW). When little knowledge was accessible (Hyundai), brand evaluations were more positive after listing many as compared with few positive aspects about the car, indicating that participants based their judgments on the content of recalled information. Conversely, when knowledge was moderately accessible (BMW), brand evaluations were more negative after listing many as compared with few positive aspects about the car, indicating that participants based their judgments on ease-of-retrieval. In another experiment, a similar case was made for knowledge being moderately versus highly accessible. Participants relied on ease-of-retrieval when knowledge was moderately accessible, but relied on content information when knowledge was highly accessible (Tybout et al., 2005). Related evidence has been provided by Ofir (2000). The author investigated the reliance on ease-of-retrieval under conditions of medium and high levels of domain knowledge. Results show that individuals with medium levels of domain knowledge base their judgments on ease of retrieval, while individuals with very high levels of domain knowledge (i.e., experts) base their judgments on content information. Taken together, the findings demonstrate that experience moderates the use of ease-of-retrieval and point to the importance of taking participants' degree of prior experience into account when investigating the formation of procedural justice judgments.

In the present study, experience was operationalized via applicants' experience with online applications. Whereas some applicants had already taken part in other selection procedures, others had less experience with applying to companies. We argue that if a person has not often applied to other companies before, her or his experience with such online application procedures is low. In contrast, if a person has more often applied to other companies, she or he is likely to have a medium level of experience. We further argue that very high levels of experience (i.e., the 'experts' in the studies by Ofir, 2000; and Tybout et

al., 2005, cited above) can only be acquired if applicants have already completed the specific application procedure at the particular company in question.<sup>2</sup> Although application procedures share common elements across companies such as providing a résumé or stating one's motivation for the application, they also differ substantially with respect to other aspects such as whether and what kind of online tests have to be taken. The company in this study employed an application procedure that was specifically tailored to the company's needs, including online tests that were not used by other companies. Accordingly, even individuals who had previously applied to other companies cannot be considered as experts, since they could be familiar only with some but not with other elements of the specific online application procedure used by this company. It therefore appeared most suitable to categorize our participants as having either low or medium levels of experience (depending on how often they had applied to other companies before), but not high levels of experience. For ease of presentation, in the following we refer to participants with low levels of experience as *inexperienced* applicants and to those with medium levels of experience as *experienced* applicants. In line with prior research (Ofir, 2000; Tybout et al., 2005), we expect ease-of-retrieval effects in justice judgments to occur only among experienced participants (medium experience), but not among inexperienced participants (low experience).

#### *Description of Theoretical Model: The Interplay of Uncertainty and Experience*

Most research investigating moderators examines only one variable in isolation (e.g., Müller et al., 2010; Tybout et al., 2005). However, as the following analysis reveals, looking at one moderator tells only part of the story. The joint analysis of several moderators is therefore a useful endeavour, especially if the moderators investigated are likely to co-occur, as is the case for uncertainty and experience. With respect to experience, we draw upon prior research (Ofir, 2000; Tybout et al., 2005) and propose that inexperienced applicants base their justice judgments on content information, while more experienced applicants base their justice judgments on ease-of-retrieval. With respect to uncertainty, we draw upon the

uncertainty management model (Van den Bos & Lind, 2002) and propose that for individuals who are uncertain, justice judgments are particularly relevant; uncertain individuals should therefore base their judgments on content information. By contrast, for individuals who are certain, justice judgments are less relevant; certain individuals should therefore base their judgments on ease-of-retrieval.

As noted above, uncertainty and experience co-occur in the present study and should therefore simultaneously act as moderators of reliance on ease-of-retrieval versus content information in procedural justice judgments. Combining the proposed effects of uncertainty and experience, we hypothesized the following pattern of results: *Inexperienced* applicants (both *uncertain* and *certain*) are unlikely to rely on ease-of-retrieval when forming procedural justice judgments, but should rely on content information (Tybout et al., 2005). In contrast, more *experienced* applicants should rely on ease-of-retrieval (Ofir, 2000; Tybout et al., 2005). Among these, the moderating impact of *uncertainty* needs to be considered. In line with the central tenets of the uncertainty management model as outlined above (Lind & Van den Bos, 2002; Van den Bos & Lind, 2002), *experienced uncertain* applicants should rely on content information, while *experienced certain* applicants should rely on ease-of-retrieval.

Testing this hypothesis requires an experimental paradigm that allows for disentangling the use of content information versus ease-of-retrieval when making judgments. The ease-of-retrieval paradigm introduced by Schwarz and colleagues (1991) meets this condition, and was therefore adapted to the present context. Specifically, applicants were asked to recall either one fair aspect of the application procedure (which was easy) or four fair aspects (which was difficult; see below). If participants rely on *content* information, they should rate the application procedure as *more* fair after recalling four as compared to one fair aspect. If participants rely on *ease-of-retrieval*, they should rate the application procedure as *less* fair after recalling four as compared to one fair aspect.

Applying this logic to the above outlined model, we hypothesized that *inexperienced* applicants (both *certain* and *uncertain*) rely on *content* information and thus form more positive justice judgments after recalling four as compared to one fair aspect of the application procedure. We also hypothesized that *experienced uncertain* participants rely on *content* information. Again, justice judgments should be more positive after recalling four as compared to one fair aspect. In contrast, we hypothesized that *experienced uncertain* participants rely on *ease-of-retrieval* to form justice judgments. In this case, justice judgments should be more negative after recalling four as compared to one fair aspect. This pattern of results corresponds to a three-way interaction between the number of fair aspects participants had to recall, applicants' experience with online applications, and their uncertainty during the application procedure to predict procedural justice judgments.

A pictorial description of the outlined model with its core constituents—thought content and ease-of-retrieval as information sources; uncertainty and experience as moderators; differential outcomes depending on which source of information individuals rely on—as well as the expected results is offered in Figure 1.

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## Method

### *Setting, Participants, and Procedure*

Participants were current or former job candidates at a large German aviation company. They had either applied for a specific job within the company or were generally interested in the company as a potential employer. The company's selection system is a multiple hurdle process, consisting of online-registration, online-tests, telephone interviews, on-site-interviews, and on-site tests. All participants had registered at the company's *career*

*terminal*. This is a web-based registration and application system in which candidates provide the company with personal information about their education, practical experiences, skills, and motivation for their application. Furthermore, candidates had completed one or more online tests depending on the position for which they were applying. The career terminal constitutes the first step in the company's selection process. Individuals who fulfil all formal requirements for a specific job and have passed all necessary tests can proceed to subsequent selection procedures.

For the purpose of this study, candidates were invited to take part in an online survey after they had completed their registration at the career terminal. They were informed about the purpose of the survey (assessment of how applicants evaluate the contact with the company via the career terminal) and were insured that participation was voluntary, anonymous, and unrelated to their application. If candidates wanted to take part in the survey, they could activate a link and provide their e-mail address. E-Mail addresses were collected between December 2006 and March 2007. In order to ensure complete anonymity, both the collection of e-mail addresses and the survey were conducted by an external party (a German university). After providing their e-mail address, candidates were informed that they would receive an e-mail with a link to the online survey at the end of March 2007. E-mail addresses were checked for double entries before sending out the link to the survey. At the end of March 2007 the link to the survey was sent via e-mail to all candidates who had provided their e-mail address. A reminder e-mail was sent to all candidates two weeks after the initial e-mail in order to increase the response rate (Dillman, 2000).

The survey was administered in either German or English.<sup>3</sup> Participants were again informed about the purpose of the study and were assured that participation was voluntary, anonymous, and completely unrelated to their current application or any potential reapplication to the company. Participants were then randomly assigned to the experimental conditions and responded to the survey questions. After completing the survey, participants

were thanked, debriefed, and given the opportunity to comment on the survey and their contact with the company in an open response field. Furthermore, they were given the opportunity to take part in a raffle to win one of ten prizes with a total value of 500€ (about 650 USD at that time).

Of an initial pool of 1,524 valid e-mail addresses, 517 participants fully completed the survey, representing a response rate of 34%. According to a meta-analysis by Cook, Heath, and Thomson (2000), the mean response rate in web- or internet-based surveys is 34.6%. The response rate in the present study can therefore be considered as typical of the employed sampling format.<sup>4</sup> Participants' average age was 30.24 years ( $SD = 8.90$ ); 50% of participants were male. A comparison with other applicants of this company suggests that the demographic characteristics of the study sample were representative of individuals applying for jobs at this company. Since the selection procedure includes several steps, participants were at different stages of the application process when they responded to the survey: 74% of the candidates had completed one or more online tests, 25% had taken part in a telephone interview, 16% had had an on-site interview, and 17% had taken on-site tests. Among those who had applied for a specific job at the company ( $N = 467$ ), 14% had proceeded in the application process, 37% had been rejected, and 49% had not yet received feedback. The time frame between registration at the career terminal and responding to the survey ranged from one to four months.

### *Independent Variables*

*Ease-of-retrieval.* Ease-of-retrieval was manipulated via the number of fair aspects of the contact with the company that participants were asked to recall. Participants were randomly assigned to one of two experimental conditions and were asked to name either one or four fair aspects. Specifically, participants read: "In the following, we are interested in what you liked during your contact with the company. Please recall one fair aspect (four fair

aspects).” Independent pre-testing with the same company had indicated that applicants find it easy to name one fair aspect and difficult to name four.

*Process uncertainty.* Missing information constitutes an important source of uncertainty (e.g., Becker & Knudsen, 2005; Lipshitz & Strauss, 1997). In the selection context, applicants are often confronted with ambiguity, non-transparent procedures, and a shortage of relevant information about the selection process, resulting in feelings of uncertainty (e.g., Bell et al., 2004; Truxillo et al., 2004). In the current study, this type of uncertainty was labeled process uncertainty and was conceptualized as uncertainty due to a subjective perceived lack of information about the selection procedure. Since participants were real job applicants, uncertainty could not be manipulated but was measured. Process uncertainty was assessed by means of three items, namely “Missing information made me feel uncertain during the online process,” “During my contact with the company, all important information was available to me” (reversed), and “If more information had been available, I would have felt more certain when accomplishing the online activities.” Answers were given on 7-point Likert scales ranging from 1, *strongly disagree*, to 7, *strongly agree*. Items were averaged to form a single score of process uncertainty (Cronbach’s  $\alpha = .74$ ).

*Experience.* Experience was operationalized via applicants’ experience with online applications. Again, this variable could not be experimentally manipulated and was therefore measured. Participants were asked how often before they had taken part in an online application procedure at other companies. They could indicate they had applied never before, once before, two to three times before, or more than three times before. In keeping with this ordinal measurement, experience was treated as a categorical variable in the reported analyses. In line with Tybout and colleagues’ (2005) operationalization of low experience, inexperienced applicants in the present study were those who had no or only a little experience with online applications. In contrast, participants who had applied more often to other companies were categorized as experienced. Due to the specific procedures employed

by the present company, which are not used by other companies and which none of the participants had previously encountered, these participants are best compared to those with medium levels of experience in the studies of Tybout and colleagues (2005) as well as Ofir (2000). Based on the four levels of assessed experience, the sample was split such as to best approximate a median split, resulting in 62% inexperienced and 38% experienced participants. Specifically, applicants who had applied online up to three times were categorized as inexperienced participants, whereas those who had previously applied more than three times were categorized as experienced participants.

#### *Dependent Variables*

*Manipulation check.* In line with general procedures in ease-of-retrieval research (e.g., Schwarz et al., 1991), participants were asked the following two questions: “How easy or difficult was it for you to list one fair aspect (four fair aspects) of the contact with the company?” and “How easy or difficult would it have been for you to list more fair aspects?” Answers were given on 9-point Likert scales ranging from 1, *very difficult*, to 9, *very easy*. The items were averaged to form a single manipulation check index (Cronbach’s  $\alpha = .91$ ).<sup>5</sup>

*Procedural justice.* Following the recommendations by Colquitt and Shaw (2005) we used a direct measure of procedural justice (i.e., participants were asked directly how fair the process was) rather than an indirect measure (which focuses on specific aspects of the process and the particular rules promoting justice perceptions), since procedural justice was an endogenous variable in the current study. In particular, applicants’ perceived procedural justice of the contact with the company was measured with four items adapted from Dineen, Noe, and Wang (2004) as well as Steiner and Gilliland (1996), e.g. “The company acts fair during its contact with candidates.” Answers were given on 7-point Likert scales ranging from 1, *strongly disagree*, to 7, *strongly agree*. Items were averaged to form a single measure of procedural justice (Cronbach’s  $\alpha = .89$ ).

*Control Variables*

*Distributive justice.* In order to control for potentially confounding effects between distributive and procedural justice, distributive justice was assessed as a control variable. Distributive justice was measured with three items adapted from Gilliland (1994) and Leventhal (1976), for instance “I think the result of my online application (proceeded in the application process/was rejected) is fair.” Answers were given on 7-point Likert scales ranging from 1, *strongly disagree*, to 7, *strongly agree*. Items were averaged to form a single measure of distributive justice (Cronbach’s  $\alpha = .89$ ).

*Result of application.* We controlled for potential effects of the result of the application on procedural justice ratings. Participants were asked “What was the result of your application?” They could indicate that the result was positive (i.e., they had proceeded in the application process or had received a consent), that the result was negative (i.e., they had been rejected), or that they had not yet received feedback on their application. 14% of the participants stated that the result was positive, 37% stated that the result was negative, and 49% did not know the result of their application at the time of the survey.

*Tests taken.* All participants had registered at the career terminal, but not all had taken online tests. It is possible that evaluations of the application procedure were different for applicants who had already taken tests and those who had not (e.g., Bauer et al., 1998). We controlled for this possibility by asking participants: “Did you take part in one or several online tests?” 74% of the answers were “yes”, 26% were “no.”

*Registration date.* The time period between registration and responding to the survey may also have an impact on procedural justice judgments, as fairness perceptions may change over time (e.g., Ambrose & Cropanzano, 2003; Bauer et al., 1998). Thus, the registration date (month and year stated by participants) was included as control variable.

## Results

### *Relationships Between Study Variables*

Means, standard deviations, and intercorrelations are provided in Table 1. Participants' experience with online applications was negatively correlated with procedural and distributive justice perceptions ( $r = -.12, p < .05$ , and  $r = -.13, p < .05$ , respectively). The more often participants had applied online before, the less they perceived the selection procedure and the result of their application as just.

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Insert Table 1 about here

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Process uncertainty was negatively related to procedural justice ( $r = -.36, p < .01$ ) and distributive justice ( $r = -.16, p < .05$ ). The more uncertain participants were about the application process, the less they evaluated the procedure and the result of their application as fair. This finding is consistent with research showing that uncertainty may lead to less favorable evaluations (e.g., McGraw, Hasecke, & Conger, 2003).

It should be noted that the level of process uncertainty did not differ between inexperienced and experienced participants,  $|t| < 1$ , presumably because none of the participants had enough prior experiences with the procedure to completely avoid process uncertainty. Thus, high levels of uncertainty about the application process cannot be attributed to participants' low level of experience with online applications.

### *Manipulation Checks*

*Ease-of-retrieval.* To test whether the ease-of-retrieval manipulation was successful, we subjected procedural justice to a one-way analysis-of-variance (ANOVA) with ease-of-retrieval as independent variable. As expected, participants who were asked to name one fair aspect of the contact with the company experienced this task as easier ( $M = 5.76, SD = 2.35$ ) than those who were asked to name many fair aspects ( $M = 4.73, SD = 2.42$ ),

$F(1, 515) = 21.78, p < .001$ . This indicates that the ease-of-retrieval manipulation was successful.

*Process uncertainty.* To ensure that participants' uncertainty about the selection process was unaffected by the number of fair aspects participants were asked to recall, a one-way ANOVA was conducted with process uncertainty as the dependent variable and the number of aspects as the independent variable. Notably, the manipulation of ease-of-retrieval did not influence process uncertainty,  $F(1, 515) = 1.22, ns$ .

*Experience.* In order to rule out the possibility that the experimental groups differ in their ratings of experience with online applications, a one-way ANOVA was conducted with experience as the dependent variable and the number of fair aspects as the independent variable. Results indicate that the experimental manipulation had no effect on participants' reported experience with online applications ( $F < 1$ ), thus establishing the precondition for the analyses reported in the following section.

#### *Procedural Justice Judgments*

To test our hypothesis of an interaction between ease-of-retrieval, process uncertainty, and experience, a hierarchical moderated regression analysis with procedural justice as the dependent variable was carried out, following the recommendations by Aiken and West (1991). The control variables (distributive justice, result of the application, tests taken, and registration date) were entered as predictors in the regression in step 1; the number of aspects (dummy coded), process uncertainty (centred<sup>6</sup>), and participants' experience with online applications (dummy coded) were entered in step 2; the three two-way interactions between these variables were entered in step 3; the three-way interaction was entered in step 4. Results are presented in Table 2.

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Insert Table 2 about here

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The full model was significant,  $R^2 = .36$ ,  $F = 11.24$ ,  $p < .001$ . Distributive justice significantly predicted procedural justice in all four steps of the regression model ( $b = .31$ ,  $t = 5.83$ ,  $p < .001$  in the full model). None of the other control variables (result of application, tests taken, and registration date) were significant predictors in any step of the model (all  $|t|s < 1.09$ , *ns*). Process uncertainty was a significant predictor of procedural justice in all three steps of the regression ( $b = -.36$ ,  $t = -4.05$ ,  $p < .001$  in the full model). The two-way interaction between the number of aspects and process uncertainty significantly predicted procedural justice judgments only before the three-way interaction was included in the model ( $b = .29$ ,  $t = 2.64$ ,  $p < .01$  in step 3).

Importantly, these effects were qualified by the hypothesized three-way interaction between the number of fair aspects, process uncertainty, and experience with online applications in step 4. The interaction was significant ( $b = .56$ ,  $t = 2.56$ ,  $p < .05$ ) and incrementally explained 2% of the variance. To interpret this interaction effect, simple slopes were analyzed following the recommendations by Aiken and West (1991). Results are displayed in Figure 2.

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 Insert Figure 2 about here  
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Consider first *inexperienced* participants. For *inexperienced* participants who felt *uncertain* (high process uncertainty; 1 *SD* above the mean) the simple slope was significantly positive ( $b = .40$ ,  $t = 1.92$ ,  $p < .05$ ), indicating that participants who were asked to name many as compared to few fair aspects rated the selection procedure as *more fair*. Presumably, this is because these participants relied on the content of their recalled information about fairness to form a procedural justice judgment. For *inexperienced* participants who felt *certain* (low process uncertainty; 1 *SD* below the mean) the simple slope was also positive, but to a lesser extent ( $b = .31$ ,  $t = 1.55$ ,  $p < .10$ ). Although not meeting conventional levels of significance,

the positive slope may tentatively suggest that participants who were asked to name many as compared to few fair aspects tended to rate the selection procedure as more fair. Again, this is presumably because they based their judgment on content information.

Now consider more *experienced* applicants. For *experienced* participants who felt *uncertain* (high process uncertainty; 1 *SD* above the mean), the simple slope was significantly positive ( $b = .84, t = 3.17, p < .001$ ), indicating that participants who were asked to name many as compared to few fair aspects rated the selection procedure as *more fair*. Presumably, this is because they relied on the content of the recalled fair information to form a procedural justice judgment. Conversely, for *experienced* participants who felt *certain* (low process uncertainty; 1 *SD* below the mean), the simple slope was significantly negative ( $b = -.89, t = -3.39, p < .001$ ), indicating that participants who were asked to name many as compared to few fair aspects rated the selection procedure as *less fair*. In line with the theoretical model outlined above, this suggests that experienced participants who felt certain relied on the ease or difficulty with which they recalled fair aspects to form a procedural justice judgment.

In sum, the findings support the notion that individuals rely on ease-of-retrieval or content information to form procedural justice judgments, depending on their uncertainty and prior experience with application procedures. Only experienced participants who felt certain relied on ease-of-retrieval; all other participants relied on content information.

## Discussion

The present study investigated cognitive processes underlying the formation of procedural justice judgments. A field experiment revealed that *experienced* individuals who felt *certain* during the application process assigned less positive procedural justice ratings after naming many as compared to few fair aspects of the procedure. In line with a multitude of prior findings (e.g., Schwarz, 1998) this pattern of results suggests that experienced certain individuals formed justice judgments based on the ease or difficulty with which relevant

information could be brought to mind (*ease-of-retrieval*). In contrast, *experienced* individuals who felt *uncertain* and *inexperienced* individuals who felt *certain or uncertain* during the application process assigned more positive procedural justice ratings after naming many as compared to few fair aspects of the selection procedure. Presumably, this reflects that these participants relied on *content* information when forming procedural justice judgments. The present findings thus demonstrate that individuals may rely on ease-of-retrieval when forming procedural justice judgments, and that this reliance is moderated by prior experience and uncertainty. Several aspects of these findings appear noteworthy and will be detailed in what follows.

#### *Theoretical contribution*

From a theoretical perspective, at least three issues deserve mention. First, the current findings suggest that cognitive factors such as ease-of-retrieval play an important role in the formation of justice judgments. Whereas classical models of justice judgment formation focused on content information (e.g., Ambrose & Kulik, 2001; Gilliland, 1993; Leventhal, 1980), the current study demonstrates that procedural justice judgments may also be influenced by ease-of-retrieval. By investigating cognitive processes involved in the formation of justice judgments, the present findings thus contribute to our understanding of organizational justice and suggest intriguing pathways for theory development. Specifically, it would be useful to develop justice models that include both content information (e.g., characteristics of the process) as well as cognitive feelings that are involved in the judgment process. This would result in a more complete account of the mechanisms underlying the formation of justice judgments. Also, the current findings help to bridge the often unconnected literatures of justice and social cognition. Intriguingly, based on the current findings, one may further speculate that other cognitive factors (e.g., surprise, feelings of familiarity) are also involved in the formation of justice judgments. Future research may focus on these alternative sources of information, since they have been shown to be immediately

available (e.g., Pham, Cohen, Pracejus, & Hughes, 2001), constantly monitored (e.g., Whittlesea & Leboe, 2000), and constitute a generally valid source of information (e.g., Greifeneder, Bless, & Pham, 2010). Moreover, identifying other moderators of the reliance on content information versus ease-of-retrieval would be fruitful—not only for the domain of justice judgments, but also for other judgment domains.

Second, the current study reveals that prior experiences moderate the formation of procedural justice judgments. While conceptually replicating earlier research in the realm of social cognition (e.g., Tybout et al., 2005), our findings suggest that prior experiences may play a significant role in the formation of justice perceptions—a topic which has received little attention to date.

Third, the present results contribute to the uncertainty literature by providing support for the uncertainty management model (Lind & Van den Bos, 2002; Van den Bos & Lind, 2002). The uncertainty management model holds that it is particularly important for uncertain individuals to form accurate justice judgments, because “solid, firmly constructed fairness judgments” (Van den Bos & Lind, 2002, p. 3) provide a way to deal with uncertainty. Hence, uncertain individuals should base their judgments on content information rather than on ease-of-retrieval. Providing support for this assumption, uncertain participants relied on content information to form procedural justice judgments. Hence, uncertainty not only elicits more pronounced fairness effects (e.g., Van den Bos & Lind, 2002), but also influences the *way* justice judgments are formed. An intriguing extension of the uncertainty management model is thus sketched out, which future research may further explore and substantiate.

#### *Methodological strengths*

Some aspects of the present methodology deserve brief mention. First, the current findings are among the first to demonstrate the influence of ease-of-retrieval in a field setting. Although the effect of ease-of-retrieval on judgment formation is well documented in the literature (see Schwarz, 1998, 2004), previous research has mainly been conducted in

laboratory experiments, which potentially reduces the applicability of inferences to naturalistic settings. By demonstrating the influence of ease-of-retrieval on judgments in a field setting, this study provides support for the generalizability of the ease-of-retrieval effect and underscores its relevance for judgment formation in general.

Second, to bolster confidence in the proposed findings, a series of control variables were assessed and included in the analyses. It should be noted that the reported findings occurred while these variables—including distributive justice—were controlled for (see also Brockner & Wiesenfeld, 1996).

Third, to rule out the possibility that the position of the manipulation check for ease-of-retrieval affected the results, the manipulation check was assessed either before or after the dependent variables. Since ease-of-retrieval effects were observed regardless of this alternation, salience or related alternative explanations cannot account for the current findings.

### *Limitations*

As with every research endeavour, certain potential limitations should be recognized. First, internet-based assessment appeared most suitable to the requirements of an applied setting (e.g., Fraley, 2007). It is therefore possible that individuals who dislike the use of computers and the Internet did not apply online at the company or, if they did apply online, did not take part in the online survey. This potential problem of self-selection may have resulted in a reduction of systematic variance of some of the study variables. When systematic variance is reduced, existing effects may be underestimated and these effects are less likely to be detected (e.g., Cohen, Cohen, West, & Aiken, 2003). Therefore, if anything, the circumstances of this study created a more conservative test of our hypothesis. The fact that the reported effects were significant despite potentially disadvantageous variance conditions render the results methodologically more convincing.

Second, following general practice in the ease-of-retrieval literature (e.g., Schwarz, 2004), self-report data was used to assess applicants' perceptions of the online application procedure, because perceptions are inherently subjective. Yet, self-reports also entail a number of disadvantages, such as potential bias due to social desirability, which may have influenced the present results. Several steps were taken to counteract this problem, such as emphasizing that participation in the survey would not influence the current or any potential future application to the company. Moreover, it should be noted that a change in the *overall* level of fairness (which may have occurred due to social desirability) would not affect the reported test of the moderation hypothesis.

Third, it needs to be acknowledged that we used a cross-sectional design to investigate which variables influence procedural justice judgments. As longitudinal designs would allow for further inferences such as developments over time, future research may extend the current findings by investigating the influence of critical events, such as when applicants receive feedback.

Fourth, experience in this study was operationalized as a categorical variable and only two levels of experience (low and medium) were considered. Thus, the current study does not allow for inferences about how highly experienced individuals form justice judgments. It would be advisable in future research to employ a continuous measurement of experience and to consider all three levels of this variable (low, medium, and high). This would provide a more comprehensive account of how individuals' experience moderates the reliance on content versus ease-of-retrieval in justice judgment formation.

Fifth, the three-way interaction effect reported in this study was small, accounting for 2% of the variance over and above the main effects. While this may not appear to be much at first glance, it has been argued that moderator effects explaining as little as 1% of the total variance of the model should be considered important (Evans, 1985). Against this

background, the interaction effect reported in the present study is reasonably meaningful and provides a satisfactory basis for inferring useful interpretations.

### *Practical Implications*

From an applied perspective, several lines of thought are of interest. First, the current results suggest that factors other than content information may be involved in the formation of justice judgments. Based on these findings, it would appear that disregarding the potential influence of these aspects may lead to sub-optimal strategies of how to change perceptions of justice. For example, when individuals encounter a selection procedure in which fair aspects are hard to detect, recalling those aspects may be difficult and the selection procedure may be perceived as rather unfair. Giving fair aspects more prominence (e.g., by explicitly stating that everybody is treated in the same way) makes it easier to detect and to recall these fair aspects, which in turn should lead to more positive perceptions of justice.

Second, the use of satisfaction surveys is common organizational practice (e.g., Rogelberg, Luong, Sederburg, & Cristol, 2000; Rogelberg, Spitzmueller, Little, & Reeve, 2006). The findings of the current study suggest that the way in which organizations ask applicants about their reactions to application procedures after the selection process may influence applicants' reactions, over and above the impact of the procedure itself. Hence, it would appear advisable for organizations to consider the possible negative influences of these factors when designing satisfaction surveys, so as to avoid potential negative effects associated with the difficulty of recalling overly large amounts of information about fairness.

Third, the role of uncertainty in the current findings is noteworthy. Not only did uncertainty moderate the influence of ease-of-retrieval on justice judgments; uncertainty was also directly related to less positive evaluations of the application procedure. This is consistent with research showing that uncertainty leads to more negative evaluations (e.g., McGraw et al., 2003). In sum, uncertainty seems to play a decisive role in justice perceptions and may have unfavorable consequences for individuals' attitudes and behaviors towards the

company (see also Bell et al., 2004; Truxillo et al., 2004). Organizations would thus be advised to be aware of potential sources of uncertainty and to take appropriate measures to reduce these. Lower levels of uncertainty would prove helpful in establishing and maintaining positive perceptions of and reactions to the organization. Note that uncertainty that arises from the situation itself—as investigated here and in contrast to person-immanent types of uncertainty—may be effectively decreased by changing the situation from which uncertainty arises, thus offering companies a number of ways to increase positive perceptions.

### *Conclusion*

Although there is a great deal of interest in organizational justice and individuals' reactions to it, relatively little is known about how justice judgments are formed. While past research has mainly focused on the role of content information, this study investigated cognitive processes underlying the formation of procedural justice judgments. We demonstrated that factors other than content information—namely the ease or difficulty of retrieving such information—also have an important impact on procedural justice judgments. Furthermore, uncertainty and experience were identified as critical determinants of the source of information individuals rely on. These findings extend our understanding of organizational justice to cognitive processes that may be involved in the formation of justice judgments.

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## Footnotes

<sup>1</sup> Interactional justice—which refers to the interpersonal treatment individuals receive as procedures are enacted—is generally considered as either a third independent type of justice (e.g., Bies, 2001, 2005; Bies & Moag, 1986), or as a sub-concept of procedural justice (e.g., Blader & Tyler, 2003a; Gilliland, 1993).

<sup>2</sup> Re-application at this company is only possible after 12 months (before which the application procedure had a different format), and employees of the company who internally applied for a different job at the company were excluded from the survey beforehand. Thus, none of the participants may be categorized as having high levels of experience with the online application procedure at this company.

<sup>3</sup> The survey was first developed in German and then translated into English by an English native speaker with high expertise in German. This English version was checked by a German native speaker with high expertise in English. The two versions were probed for consistency and revised by the first author and a research assistant. Finally, they were again proofread by the German and the English native speaker.

<sup>4</sup> It should be noted that response rates are difficult to compare across different studies as they depend on a variety of factors, including pre-notification, incentives, reminders, personal involvement, etc.

<sup>5</sup> The manipulation check was assessed at different positions in the survey. Some participants answered the items directly after naming the respective number of fair aspects, whereas others answered the items after the dependent variables had been assessed. This was done in order to control for the possibility that the position of the manipulation check influences participants' responses. However, since the reported findings are independent of this counterbalancing order manipulation, the two order conditions and the items of the manipulation check were collapsed across participants.

<sup>6</sup> A variable is centered by subtracting the mean of a variable from each subject's score on this variable (Cohen et al., 2003). According to Aiken & West (1991), continuous predictors in a moderated regression analysis should be centered in order to reduce nonessential multicollinearity and to increase the interpretability of the interaction effects. The centered predictor (in this case: uncertainty) is then multiplied with the other predictors (in this case: number of aspects, experience, and both number of aspects and experience) to form the respective interaction terms.

Table 1

*Means (M), Standard Deviations (SD), and Intercorrelations Among Study Variables.*

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7
1. Number of aspects <sup>†</sup>	--	--							
2. Process uncertainty	3.23	1.45	-.05						
3. Experience <sup>††</sup>	--	--	-.04	.04					
4. Procedural justice	5.00	1.35	.04	-.36**	-.12**				
5. Distributive justice	4.43	1.85	-.04	-.16*	-.13*	.46**			
6. Result of application <sup>†††</sup>	--	--	.03	.04	.05	-.13**	-.61**		
7. Tests taken <sup>††††</sup>	--	--	.02	.13**	.00	-.13**	.01	.25**	
8. Registration date <sup>†††††</sup>	--	--	-.06	-.11*	-.01	.07	.03	.22**	.22**

*Notes.* <sup>†</sup> 0 = few aspects, 1 = many aspects; <sup>††</sup> 0 = applied up to three times before, 1 = applied more than three times before; <sup>†††</sup> 1 = positive result, 2 = negative result, 3 = no feedback; <sup>††††</sup> 1 = tests taken, 2 = tests not taken; <sup>†††††</sup> 1 = December 2006, 2 = January 2007, 3 = February 2007, 4 = March 2007; \*  $p < .05$ , \*\*  $p < .01$  (two-tailed);  $N = 517$ .

Table 2

*Hierarchical Moderated Multiple Regression with Main and Interaction Effects of the Number of Fair Aspects Recalled, Process Uncertainty, and Experience With Online Applications Predicting Procedural Justice Judgments.*

	<i>Step 1: Before entry of independent variables, 2-way, and 3-way interactions</i>			<i>Step 2: Before entry of 2-way and 3-way interactions</i>			<i>Step 3: Before entry of 3-way interactions</i>			<i>Step 4: Full model</i>		
	<i>b</i>	<i>SE</i>	<i>t</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>b</i>	<i>SE</i>	<i>t</i>	<i>b</i>	<i>SE</i>	<i>t</i>
<b>Step 1: Control variables</b>												
Distributive justice	.32***	.06	5.70	.29***	.05	5.47	.31***	.05	5.75	.31***	.05	5.83
Result of application	-.19	.23	-.84	-.16	.22	-.72	-.10	.22	-.46	-.05	.22	-.21
Tests taken	-.27	.25	-1.09	-.18	.24	-.76	-.20	.24	-.85	-.16	.23	-.70
Registration date	.03	.09	.28	.01	.09	.14	.04	.09	.42	.04	.09	.48
<b>Step 2: Main effects</b>												
Number of aspects <sup>†</sup>				.24	.17	1.43	.40	.21	1.92	.35	.21	1.69
Process uncertainty				-.28***	.05	-5.16	-.45***	.08	-5.42	-.36***	.09	-4.05
Experience <sup>††</sup>				-.02	.16	-.11	.10	.20	.52	.17	.19	.60
<b>Step 3: 2-way interactions</b>												
Number of aspects x Process uncertainty							.29**	.11	2.64	.03	.15	.21
Number of aspects x Experience							-.39	.34	-1.14	-.37	.34	-1.10
Process uncertainty x Experience							.13	.11	1.23	-.08	.13	-.57
<b>Step 4: 3-way interaction</b>												
Number of aspects x process uncertainty x Experience										.56*	.22	2.56
<b>Model summary</b>												
<i>R</i>	.464			.555			.579			.595		
<i>R</i> <sup>2</sup>	.215			.308			.336			.355		
$\Delta R^2$	--			.092***			.028*			.019*		
<i>F</i>	15.93			14.53			11.42			11.24		

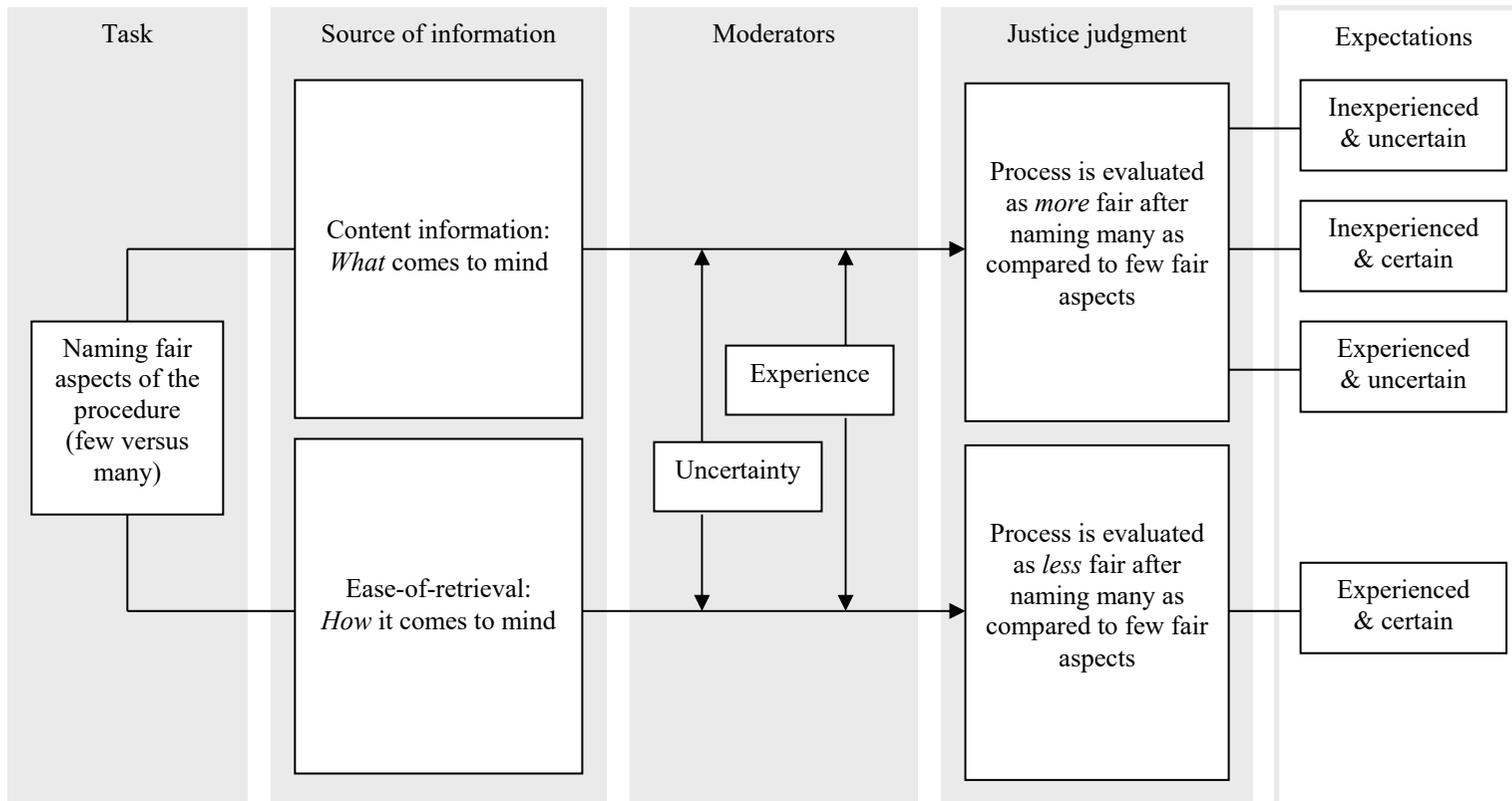
Notes. *b* = unstandardized regression coefficients. *SE* = standard errors. <sup>†</sup> 0 = 1 fair aspect, 1 = 4 fair aspects. <sup>††</sup> 0 = applied online three times or less

before, 1 = applied online more than three times before. \*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ .  $N = 517$ .

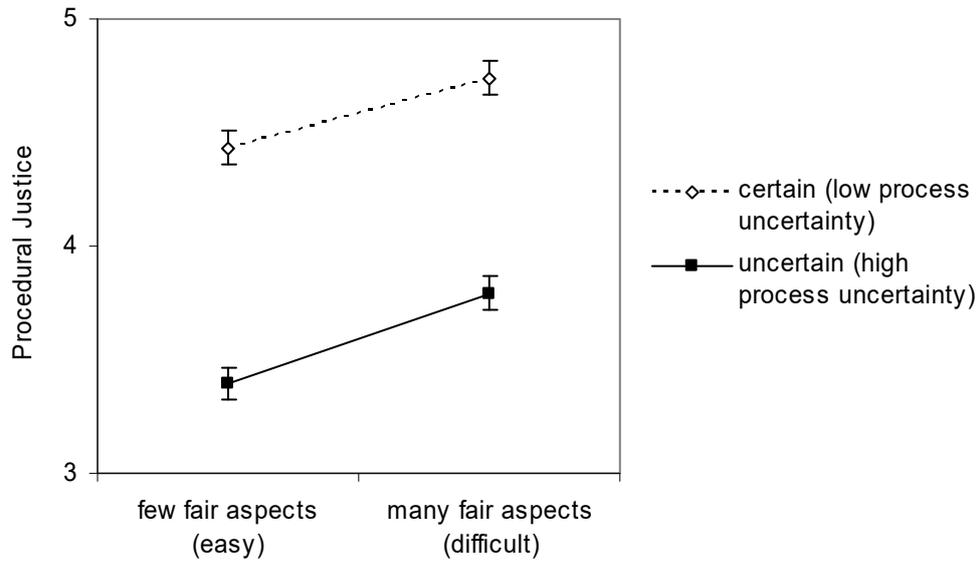
## Figure Caption

*Figure 1.* Proposed theoretical model of how justice judgments are formed. Justice judgments may be based on two sources of information: content information and ease-of-retrieval. Which source of information is used depends on the moderators uncertainty and experience. It is expected that only individuals who are experienced and certain rely on ease-of-retrieval, while all other individuals rely on content information to form justice judgments

*Figure 2.* Procedural justice judgments as a function of the number of recalled fair aspects and process uncertainty, separated for inexperienced and experienced applicants. Answers were given on 7-point scales, higher values indicate higher ratings of procedural justice.



### Inexperienced



### Experienced

