Fairness Heuristics and Substitutability Effects: Inferring the Fairness of Outcomes, Procedures, and Interpersonal Treatment When Employees Lack Clear Information

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Employees routinely make judgments of 3 kinds of justice (i.e., distributive, procedural, and interactional), yet they may lack clear information to do so. This research examines how justice judgments are formed when clear information about certain types of justice is unavailable or ambiguous. Drawing from fairness heuristic theory, as well as more general theories of cognitive heuristics, we predict that when information for 1 type of justice is unclear (i.e., low in justice clarity), people infer its fairness based on other types of justice with clear information (i.e., high in justice clarity). Results across 3 studies employing different designs (correlational vs. experimental), samples (employees vs. students), and measures (proxy vs. direct) provided support for the proposed substitutability effects, especially when inferences were based on clear interactional justice information. Moreover, we found that substitutability effects were more likely to occur when employees had high (vs. low) need for cognitive closure. We conclude by discussing the theoretical contributions and practical implications of our findings.

Keywords: organizational justice, justice clarity, judgment formation, fairness heuristic theory, need for cognitive closure

Understanding justice is important because employees' fairness perceptions impact employees' work attitudes and behaviors (for reviews, see Cohen-Charash & Spector, 2001; Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Colquitt et al., 2013; Cropanzano, Bowen, & Gilliland, 2007). Despite the proliferation of research on organizational justice, some fundamental issues remain unclear. In particular, the bulk of research on justice has focused on establishing the attitudinal and behavioral consequences of experiencing fairness and unfairness and the affective and cognitive mechanisms that underlie such experiences (e.g., Colquitt et al., 2013; Ferris, Spence, Brown, & Heller, 2012; Johnson & Lord, 2010). Given the significant effects that fairness perceptions have on employees' job attitudes and behaviors, studying how such perceptions are formed is an important endeavor for organizational scholars.

Although research exists on how fairness perceptions are formed (e.g., Nicklin, Greenbaum, McNall, Folger, & Williams, 2011), it is commonly assumed that these perceptions are based on information about outcomes, procedures, and interactions that is readily available and accurate. However, in reality, people often lack clear and relevant information on which to base their justice judgments. Existing justice theories cannot fully explain how individuals form their fairness perceptions in such uncertain conditions (i.e., without clear information; van den Bos, 2003). Previous studies that have adopted an information processing view of justice perceptions take for granted the fact that justice information is always clear and available. For instance, equity theory assumes that employees have adequate information on their own inputs and outputs and those of a referent in order to form distributive justice perception (Adams, 1965). Unfortunately, this assumption is likely the exception rather than the rule (Janssen, Müller, & Greifeneder, 2011; van den Bos & Lind, 2002). As van den Bos (2003) noted, "It is not uncommon that people lack information about the most relevant justice issues" (p. 483). Unfortunately, the usefulness of

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theories that assume employees have access to clear and available justice-related information decreases when this assumption is violated. There is a need, then, to better understand how justice judgments are formed when clear information about the fairness of outcomes, procedures, or interactions is lacking.

To date, much of the empirical research on justice perception formation either has failed to assess the clarity of justice information or has employed clear-cut manipulations of fair and unfair treatment. Thus, we have little insight into how people judge specific types of justice (e.g., procedural fairness) when relevant information (e.g., information about procedures) is unavailable. This is unfortunate because, as Goldman and Thatcher (2002) noted, "many of the issues involved with organizational justice concern events . . . are ambiguous in nature and thus can have multiple interpretations" (p. 106). Fairness heuristic theory (FHT; Lind, 2001; Lind, Kulik, Ambrose, & de Vera Park, 1993) suggests that when people lack adequate information about a specific type of fairness (e.g., procedural fairness), they rely on other types of fairness information (e.g., distributive and interactional fairness) as a heuristic substitute to form their evaluation. Consistent with FHT, van den Bos, Vermunt, and Wilke (1997) found that fairness judgments were more strongly influenced by initial justice information than by justice information that was subsequently received, suggesting that fairness heuristics are derived from whatever information is immediately available.

Although initial tests of FHT are informative, some unanswered questions remain. One such question is whether any type of justice with clear information can work as a heuristic for other types of justice that lack clear information. Daly and Tripp (1996) found that distributive justice (DJ) information influenced procedural justice judgments, but can procedural justice (PJ) information substitute for DJ or interactional justice (IJ) judgments as well? Another question is whether or not these substitutability effects are constrained by individual differences. People who are uncomfortable with uncertainty may be especially prone to use heuristics when information is unclear or unavailable. To answer these questions, we introduce the construct of justice clarity (i.e., the extent to which people have direct and relevant information to judge a particular type of justice). Based on FHT, our central premise is that when people lack information about a specific type of justice (i.e., when justice clarity is low), they form their judgments by using information concerning other types of justice with high clarity. Furthermore, we examine whether people with high need for cognitive closure, an individual difference concerning the desire for definite knowledge and the eschewal of ambiguity (Kruglanski, 1989), are more prone to these substitutability effects.

The present study contributes to the existing literature in three key ways. First, by investigating justice as an outcome variable (see Scott, Colquitt, & Zapata-Phelan, 2007), this study answers the fundamental question of how justice perceptions are formed when clear information is lacking. We challenge the prevailing assumption in the literature that people always have clear information when forming justice judgments. Such an assumption limits our understanding of justice, especially of how justice functions outside the laboratory, where information is lacking or even conflicting.

Second, by analyzing how individuals evaluate one type of organizational justice when lacking the requisite information, we demonstrate the effects of information availability (even notdirectly-related information) on fairness judgments. Scholars have suggested that employees sometimes have to rely on tangential information when judging justice (e.g., Daly & Tripp, 1996; Goldman & Thatcher, 2002; Janssen et al., 2011; Vermunt & Törnblom, 1996), yet this possibility has not been systematically investigated. Examining this issue can deepen our understanding of how fairness judgments are formed in the absence of directly related information and help to identify what information serves as a surrogate when clarity on a particular dimension is low.

Third, by introducing need for cognitive closure into the justice domain, we identify a potentially important informationprocessing-related variable that contributes to our understanding of fairness heuristics and justice judgments. Although individual differences may play a key role in FHT, they have mostly been ignored up to now (e.g., Lind, 2001; Lind et al., 1993). Furthermore, evidence regarding justice-based individual difference variables has been mixed (e.g., Scott & Colquitt, 2007), possibly because some relevant variables have been overlooked. Need for cognitive closure is especially relevant because it influences how people react to uncertainty (Kruglanski, 1989). When uncertainty is high, available justice information is particularly salient (van den Bos & Lind, 2002). In addition, need for cognitive closure impacts how much effort people devote to decoding justice information (Johnson & Steinman, 2009), which would otherwise be processed automatically at implicit levels (Johnson, Lanaj, Tan, & Chang, 2012; Johnson & Lord, 2010; Skarlicki & Rupp, 2010). Thus, introducing need for cognitive closure into the justice literature provides novel insight into how people process and use justice information.

Justice Judgments as Dependent Variables

Relative to research investigating the consequences of justice judgments, fewer studies have examined how justice judgments are formed, as specified by an information processing perspective. Such studies can be grouped into two categories. Studies in the first category examined how characteristics of the information influence how justice judgments are formed. For example, Nicklin et al. (2011) found that characteristics such as outcome severity, target knowledge and expertise, and sins of commission versus omission affected fairness judgments via counterfactual thoughts. As another example, van den Bos et al. (1997) found that people place greater weight on justice information received first versus later when judging fairness.

Studies in the second category examined the role of affect in forming justice judgments. The fairness judgment process can be quite subjective and emotional; thus, in uncertain conditions fairness perceptions may be shaped by affective states not tied to justice events (van den Bos, 2003). For example, Lang, Bliese, and Lang (2011) found that depressive symptoms influenced justice judgments that people subsequently formed. A quantitative review by Barsky and Kaplan (2007) reached similar conclusions, finding that chronic and transient affective states predicted fairness judgments.

Although informative, a key limitation of this line of research is that the information used to form justice judgments is always assumed to be clear, regardless of the nature of the information (cognitive or affective). Quite often, though, people lack clear information to form justice judgments (Janssen et al., 2011; van den Bos, 2003), yet the existing organizational justice literature provides little insight into how people cope with such circumstances. To address this gap in our knowledge, we explore how justice judgments are formed under a common situation: where relevant information on one type of justice is clear but information on other types of justice is ambiguous.

Forming Justice Judgments When Information Is Unclear

In this section we discuss how individuals form fairness judgments when lacking clear, directly related information. We propose, on the basis of FHT, that clear information about the fairness of outcomes (distributive justice or DJ), the fairness of procedures used to determine outcomes (procedural justice or PJ), or the fairness of interpersonal interactions and explanations (interactional justice or IJ) influences how people judge other types of justice for which relevant information is unclear. A central tenet of FHT is that people use cognitive shortcuts or heuristics to form and respond to justice judgments (Lind, 2001). The justice judgment process comprises two phases: the judgmental phase (when people form general fairness judgments) and the use phase (when people use fairness judgments as a surrogate for interpersonal trust in guiding cooperative action). The current study focuses on the judgmental phase. During this phase, people rely on whatever justice information is available when evaluating the fairness of some target. Doing so leads to substitutability effects, such that information about one type of fairness (e.g., DJ) can substitute or fill in information for other types of fairness that are unknown (e.g., PJ; Lind, 2001; van den Bos et al., 1997). These substitutability effects are consistent with more general information processing theories. For example, cognitive heuristics theory (Kahneman, Slovic, & Tversky, 1982; Tversky & Kahneman, 1974) suggests that people rely on heuristics when forming judgments, such as judging the frequency of events by how easily they can be retrieved from memory. Although the use of heuristics may bias judgments, people's reliance on them is ubiquitous. In the case of justice judgments, heuristics are useful because they enable people to evaluate fairness in the absence of complete information and then use these evaluations to minimize their likelihood of being exploited by others (Lind, 2001).

In some situations, information about outcomes, procedures, and interactions is readily available and clear, making it easy to form judgments about DJ, PJ, and IJ. In situations where information on all three types of justice is available and clear, people form justice judgments for each type in a relatively independent manner using the corresponding clear information. Because judgments of DJ, PJ, and IJ are based on unique information, the associations between them are small and may even be in opposing directions (e.g., when a courteous supervisor makes an unfavorable decision). In reality though, not all justice information is necessarily available or clear (van den Bos, 2003; van den Bos & Lind, 2002), especially for structural forms of justice such as DJ and PJ. In organizational settings, for example, the information and process used by managers to make performance evaluations and promotion decisions is often not communicated to employees (Daly & Tripp, 1996; Greenberg, 1987). Even outcome information can be unclear, such as when employees are unable to judge the fairness of their own pay raise because they lack information about pay raises received by referent others.

According to FHT, when information about one type of justice is ambiguous, clear information about other types of justice can serve as a judgment-simplifying heuristic device. Thus, employees may judge the fairness of a pay raise, for which they lack full information, by inferring from the fairness of interactions or procedures, assuming that information about one or both types is clear. As van den Bos (2003) suggested, "When such solid outcome information is absent, however, people start using other justice information" (p. 483). In this case, the associations between judgments of DJ, PJ, and IJ will be stronger because they are based on shared information. Whether or not justice judgments are the product of substitutability effects, then, depends on justice clarity.

We use the term *justice clarity* to describe the extent to which people have clear and relevant information to form justice judgments. Justice clarity is different from justice perception. The latter refers to how fair people judge their outcomes, procedures, or interpersonal treatment. In contrast, justice clarity refers to whether people have access to relevant information for making such judgments or forming such perceptions. In other words, justice perceptions are about the end results, whereas justice clarity is about the information that informs these results. Thus, corresponding to the three types of justice (i.e., DJ, PJ, and IJ), there are three types of justice clarity (i.e., DJ, PJ, and IJ clarity). Justice clarity and justice perceptions are orthogonal. It is possible, for example, that employees have clear and relevant information on how rewards are determined (i.e., high PJ clarity) and perceive the process to be unfair (i.e., low PJ). Alternatively, employees may lack clear and relevant information on whether the pay they receive is fair (i.e., low DJ clarity), yet somehow perceive it to be fair (i.e., high DJ).

In reality, there are situations in which DJ-related information is available and clear but information regarding procedures and interactions is lacking. For instance, in staffing contexts, applicants are informed only of the selection results and often have minimal knowledge of the selection process and little interaction with recruiters (Gilliland, 1993). In such cases, FHT predicts, individuals will use DJ to inform their judgments of PJ and IJ (the "fair outcome effect"; Lind, 2001, p. 74). Thus, judgments of PJ and IJ, for which people lack clear information, will have a strong association with judgments of DJ, for which clear information is available. Daly and Tripp (1996) proposed, paralleling this idea, that outcome information provides a salient and relevant external cue regarding procedural fairness when information about procedures is lacking; thus, employees can rely on outcome information to infer PJ.

In other situations, people may have clear information only on procedures and not outcomes or interactions, in which case DJ and IJ will be inferred from PJ (the "fair process effect"; Lind, 2001, p. 74; van den Bos, Lind, & Wilke, 2001). For example, employees may have clear information about their performance management system (e.g., owing to participative goal setting and the use of self-ratings) and be able to judge its fairness even though they lack information about outcomes (e.g., whether or not they were recommended for a raise) and interactions (e.g., no feedback or explanations have been communicated to them). In this case, FHT predicts that PJ judgments will substitute for DJ and IJ judgments. Although there is preliminary evidence for fair outcome and fair process effects (van den Bos et al., 2001), substitutability effects have yet to be extended to IJ. This is somewhat surprising, because information about social types of justice (e.g., how respectfully people are treated and how reasonable explanations are) is assumed to be clearer and more available than information about structural types of justice (e.g., outcomes and procedures; Bies, 2001; Greenberg, 1987). For example, when newcomers enter an organization, initial encounters with supervisors and other authority figures provide immediate information about IJ; yet, newcomers still lack information about outcomes and procedures. In these cases, we suggest on the basis of FHT, a "fair interaction effect" will occur, such that IJ judgments based on clear information will influence employees' DJ and PJ judgments.

We propose that when information for one type of justice is clear and information for the other types of justice is ambiguous, individuals will use the clear type of justice to form their judgments about the ambiguous types of justice. Under these circumstances, the two ambiguous types of justice will have stronger associations with the clear type of justice than when clarity is high for all three types of justice. Note, however, that the theoretical mechanism proposed by FHT—clear justice information serves as a substitute for unclear justice information—is the same for DJ, PJ, and IJ. This heuristic impacts how information is processed and is not expected to vary as a function of the content of information. Thus, clarity is proposed to have uniform effects across the three types of justice.

Hypothesis 1: When DJ clarity is high and PJ and IJ clarity are low, DJ will have stronger relations with (a) PJ and (b) IJ than it will when all three types of justice clarity are high.

Hypothesis 2: When PJ clarity is high and DJ and IJ clarity are low, PJ will have stronger relations with (a) DJ and (b) IJ than it will when all three types of justice clarity are high.

Hypothesis 3: When IJ clarity is high and DJ and PJ clarity are low, IJ will have stronger relations with (a) DJ and (b) PJ than it will when all three types of justice clarity are high.

Moderating Role of Need for Cognitive Closure

FHT suggests that high-clarity justice information is used to fill gaps in knowledge because most people are uncomfortable with uncertainty (van den Bos & Lind, 2002). However, people differ in the extent to which they rely on cognitive heuristics (de Dreu, Koole, & Oldersma, 1999) and in their comfort with uncertainty (Kruglanski, 1989). One variable that captures these differences is need for cognitive closure, which reflects people's desire to have concrete information in order to reduce uncertainty (Kruglanski, 1989). People with high need for cognitive closure covet definitive answers, even when they face situations that are knowingly ambiguous and lack conclusive evidence, or even if it means that answers may be inaccurate or inappropriate. People with low need for cognitive closure, in contrast, tolerate ambiguity and prefer to suspend judgment, search for additional information, and conduct in-depth analysis on available information (Kruglanski & Webster, 1996; Mayseless & Kruglanski, 1987).

Research suggests that need for cognitive closure affects information processing and reliance on heuristics (e.g., Dijksterhuis, Van Knippenberg, Kruglanski, & Schaper, 1996; Jamieson & Zanna, 1989). People with high need for cognitive closure prefer to make quick decisions, even when they lack adequate information and have the option of collecting further information (Liu, Zhang, & Liang, 2007). In cases where additional information is indeed collected, those high in need for cognitive closure use less time to do so (Van Hiel & Mervielde, 2002). Instead, relying on heuristics to quickly arrive at a solution is a common strategy used by people high in need for cognitive closure. For example, high need for cognitive closure is linked to the use of heuristics when forming social judgments (Chao, Zhang, & Chiu, 2010) and making concessions during negotiations (de Dreu et al., 1999).

Taken together, theoretical and empirical evidence suggests that people high in need for cognitive closure rely on heuristics to stave off feelings of uncertainty (Kruglanski & Webster, 1996; Mayseless & Kruglanski, 1987). When lacking directly related information, such people will be especially prone to base their judgments on cognitive shortcuts like the substitutability heuristic proposed by FHT. When people with high need for cognitive closure judge a specific kind of justice with low justice clarity, they will be more likely to make inferences based on other types of justice with high justice clarity. In contrast, those with low need for cognitive closure tolerate ambiguity and are less reliant on heuristics (de Dreu et al., 1999; Kruglanski & Webster, 1996). When faced with unclear justice information, they will rely less on other types of justice information and bear the uncertainty until clear information becomes available. According to FHT, the substitutability heuristic applies to all three types of justice information, thus the moderating effects of need for cognitive closure are expected to be uniform across DJ, PJ, and IJ.

Hypothesis 4: The effect of one type of justice with high justice clarity on another type of justice with low justice clarity is moderated by need for cognitive closure, such that the effect is stronger when need for cognitive closure is high than when it is low.

Figure 1 depicts our overall theoretical framework. To test the hypotheses, we conducted three studies. In Study 1, we examined whether IJ based on clear information has stronger relations with the other two types of justices when their clarity is low versus high. In this case, our sample comprised assembly-line workers and justice clarity was operationalized with a proxy. In Study 2, we examined the substitutability effects for all three types of justice in a sample of students evaluating the fairness of their academic scholarships. Of importance, justice clarity was measured directly.



Figure 1. Overall theoretical framework. The figure illustrates how individuals form fairness judgment under the following condition: when the information on X justice is clear but the information on Y and Z justice is ambiguous. More specifically, X justice represents one of distributive, procedural, or interactional justice with clear information; Y and Z justice represent one of distributive, procedural, or interactional justice with ambiguous information. Studies 1 and 2 both involved field surveys; thus, in Study 3 we utilized a scenario-based experiment to manipulate both the clarity of justice information and whether the information exemplified high or low fairness. This study provided an opportunity to verify our prior results with a robust experimental design and to infer causality. We also examined the moderating role of need for cognitive closure in Study 3.

Study 1

In Study 1, we examined assembly-line workers in manufacturing companies in a southern province in China. Assembly-line workers are a mainstream labor group with relatively low levels of education; they occupy low-skilled physical labor jobs but play a vital role in fueling China's economic development (Chang, 2009). To illustrate, 252 million workers staff China's production lines and construction sites (Mozur & Orlik, 2012) and are gaining increased attention from management scholars (e.g., Bernstein, 2012). This population provided us with a unique opportunity to test our prediction that IJ with high level of clarity has stronger relations with DJ and PJ that are based on unclear versus clear information (Hypothesis 3) for two reasons. First, these assemblyline workers have continual direct contact with their supervisors, and how supervisors treat them provides clear cues about IJ. As Scott et al. (2007) noted, IJ "can be judged in virtually any encounter between managers and subordinates, regardless of whether resource allocation decisions are being made" (p.1597). In contrast, DJ and PJ information can only be culled from resource exchanges (Scott et al., 2007), which are infrequent for these assembly-line workers. Furthermore, IJ is a noncomparative form of justice (Bies, 2001), such that disrespectful and abusive behaviors are enough to arouse people's sense of injustice without the need for social comparisons. Judging DJ and PJ, however, requires social comparisons in order to establish whether resource exchanges are equitable and procedures are applied consistently across employees (Patient & Skarlicki, 2010). Thus, the clarity of IJ information was expected to be higher than that of DJ and PJ information for this sample.

Second, the assembly-line sample is also unique in that it comprises both new generation workers (born during or after 1980) and old generation workers (born before 1980). Research indicates that new generation assembly-line workers differ from their old generation counterparts in key aspects, including work values and job characteristics. Compared with old generation workers, new generation workers place greater emphasis on fairness (China Daily, 2012; Han, 2006), causing them to invest more effort to obtain DJ- and PJ-relevant information (Wang, 2008). This suggests that the clarity of DJ and PJ information may be lower for old versus new generation workers. It is reasonable to infer that relationships of high-clarity IJ with both DJ and PJ should be stronger for old generation workers than for new generation workers. That is, old generation workers will rely more on the substitutability heuristic when judging DJ and PJ, because they lack clear information as compared to new generation workers.

Our logic above assumes that clarity is higher for IJ than the other two types of justice among these assembly-line workers and that clarity on DJ and PJ is higher for new versus old generation workers. To verify these assumptions, we assessed justice clarity in a separate sample of 152 Chinese assembly-line workers as part of a post hoc pilot study (67% were male and the average age was 30 years old). DJ clarity ($\alpha = .84$), PJ clarity ($\alpha = .90$), and IJ clarity ($\alpha = .76$) were measured with scales developed for Study 2 (items are listed in Appendix B and the scales are described in detail in Study 2). Consistent with expectations, results indicated that IJ clarity (M = 3.41, SD = .70) was higher than both DJ clarity (M = 3.30, SD = .82), t(151) = 2.04, p < .05, and PJ clarity (M = 3.21, SD = .98), t(151) = 2.92, p < .01. Furthermore, when we examined relationships of generation with justice clarity (coded 0 =old generation, 1 =new generation), we found that new generation workers reported higher DJ clarity (M = 3.44, SD = .93) and PJ clarity (M = 3.45, SD = .74) than old generation workers (DJ clarity: M = 2.89, SD = .98, t(150) = 3.58, p < .001; PJ clarity: M = 3.09, SD = .89, t(150) = 2.68, p < .01) but not IJ clarity (new generation: M = 3.40, SD = .67; old generation: M = 3.42, SD = .75, t(150) = .14, ns). In line with our assumptions, IJ clarity is higher than DJ and PJ clarity among the assembly-line workers, and DJ and PJ clarity were lower for old versus new generation workers. We were therefore able to test Hypothesis 3 in this study, examining whether IJ has stronger relationships with DJ and PJ when the clarity of these latter two types of justice is lower (within the old generation subsample) as opposed to higher (within the new generation subsample).

Method

Sample and procedures. Data were collected as part of a large project on assembly-line workers in a southern province in China. Four thousand on-site questionnaires were distributed, and 2,232 valid responses were returned (for a 56% response rate). Approximately half of the respondents were female (55%), average age was 24.7 years, average work experience was 2.2 years, and 87% were new generation workers.

Measures.

Justice perceptions. Due to questionnaire length constraints, we measured the three types of justice with a shortened version of Liu, Long, and Li's (2003) scale, which is based on Colquitt's (2001) measure but revised slightly to fit the Chinese context and language (items are listed in Appendix A). We retained items with the highest loadings on their respective factors. Four items ($\alpha = .85$) assessed DJ (e.g., "Compared with my coworkers in the same job, my salary is reasonable"), four items ($\alpha = .90$) assessed PJ (e.g., "The way salaries are distributed in our company is open and transparent"), and eight items ($\alpha = .93$) assessed IJ (e.g., "My supervisor treats me in an unbiased manner"). The IJ subscale was longer because it included items that tapped both interpersonal and informational justice.

DJ and **PJ** clarity. Generation (0 = old generation, born) before 1980; 1 = new generation, born during or after 1980 served as a proxy for DJ and PJ clarity. A value of 1 (new generation) signifies higher clarity on both DJ and PJ.

Control variables. We controlled for gender (0 = female; 1 = male), education level (1 = primary school or below; 2 = middle school; 3 = high school; 4 = college or above), job tenure (in years), and wage (logarithm of income) due to their established relations with justice perceptions (Cohen-Charash & Spector, 2001).

Results and Discussion

Table 1 reports the means, standard deviations, and correlations for the focal variables. We first conducted a confirmatory factor analysis (CFA) to verify the distinctiveness of the three types of justice. Based on recommended fit index criteria (e.g., standardized root mean square residual [SRMR] \leq .10, root mean square error of approximation [RMSEA] $\leq .08$, comparative fit index [CFI] \geq .90; Hu & Bentler, 1999), results indicated that the three-factor model ($\chi^2(101) = 1.957.28$, p < 1.957.28) .001; SRMR = .04, RMSEA = .09, CFI = .93) had better fit than a two-factor model (PJ and IJ were combined; $\chi^2(103) =$ 4,028.18, *p* < .001; SRMR = .07, RMSEA = .13, CFI = .85; $\Delta\chi^2$ = 2,070.9, Δdf = 2, p < .001) and a one-factor model $(\chi^2(104) = 7,017.15, p < .001; \text{SRMR} = .10, \text{RMSEA} = .17,$ CFI = .73; $\Delta \chi^2$ = 5,059.87, Δdf = 3, p < .001). Factor loadings for all but two items (.64 and .65) were higher than the cutoff value of .70. We calculated average variance extracted (AVE) of the three types of justice and they were .70, .59, and .63 for DJ, PJ, and IJ, respectively. The AVEs were also higher than the corresponding squared interconstruct correlations (SIC). These results indicate that the three types of justice are distinguishable (see Fornell & Larcker, 1981).

Table 2 reports the regression analyses we conducted to test Hypothesis3. Results of Model 2 indicated that the IJ × Generation interaction was significant ($\beta = -.18$, p < .001). As illustrated in Figure 2, the nature of the interaction was such that the relationship between IJ and DJ was stronger when DJ clarity was low (old generation: $\beta = .71$, p < .01) than when it was high (new generation: $\beta = .60$, p < .01).

When we tested the relationship between IJ and PJ, Model 4 results indicated that the IJ × Generation interaction was significant ($\beta = -.12, p < .05$). As illustrated in Figure 3, the relationship between IJ and PJ was stronger when PJ clarity was low (old generation: $\beta = .67, p < .01$) than when it was high (new generation: $\beta = .58, p < .01$). Hypothesis 3 therefore received full support.

Consistent with predictions, high-clarity IJ had stronger relations with DJ and PJ when the clarity of these justices was low than when it was high. This finding suggests a "fair interaction effect," such that IJ can be used as a heuristic to judge other types of justice. Although encouraging, these findings are limited in several respects. First, the pilot study results suggest that worker generation covaries with DJ and PJ clarity, but generation is not an ideal proxy because it is distant from information clarity and it does not tease apart DJ and PJ clarity. Second, the sample had a disproportionately high number of new generation workers (87%), resulting in restriction of range.¹ Third, the sample provided a conservative context for testing our predictions because information on DJ and PJ was unclear for assembly-line workers. The low variance on these variables may explain the relatively small effect sizes observed in Study 1. Although these effects sizes are within the range of what is often observed for categorical moderators (see Aguinis, Beaty, Boik, & Pierce, 2005), additional research is needed to verify their practical significance. Thus, we conducted a second study in which justice clarity was directly measured.

Study 2

Method

Participants and procedure. In most Chinese universities, scholarships are awarded annually based on performance criteria (e.g., grades, participation in extracurricular activities). For undergraduates, these scholarships not only provide substantial economic support but also serve as official markers of students' academic and nonacademic achievements. College students therefore attach great importance to the assessment process and outcomes of scholarship. Such a situation creates a suitable context in which to examine how individuals make fairness judgments.

Undergraduate students at several large urban universities in China participated in this study. We administered two surveys separated by a 2-week lag. At Time 1, 425students were invited to participate in a survey to evaluate the clarity of DJ, PJ, and IJ regarding their scholarships. Of these, 384 responded (for a response rate of 90%). At Time 2, the 384 students who participated at Time 1 received a follow-up survey that assessed their perceptions of DJ, PJ, and IJ regarding the scholarships. Of these, 280 students responded (for a response rate of 73%).

Surveys were collected anonymously, and participants' e-mail addresses or instant messenger IDs were used to match the Time 1 and Time 2 data. After removal of surveys with substantial amounts of missing values or unidentified data, our final sample consisted of 242 participants with matched surveys (for a final response rate of 57%). Half of the participants were male (53%), and their average age was 21 years. In order to assess possible respondent bias, we compared those who participated in the Time 1 survey only with those who participated in both surveys. Results indicated that there were no significant differences between the two groups on the measured variables (e.g., three types of justice clarity, age, and gender).

Measures. Participants responded to all survey items on a 5-point Likert scale (from 1 = Strongly Disagree to 5 = Strongly Agree). The English scales used in Studies 2 and 3 were translated into Chinese following Brislin's (1980) back-translation procedure.

Justice perceptions. We adapted Colquitt's (2001) four-item scale ($\alpha = .74$) to measure DJ (e.g., "My scholarship outcome reflects the effort I have put into my work") and his seven-item scale ($\alpha = .81$) to measure PJ (e.g., "Those procedures used to determine scholarships have been free of bias"). We adapted Moorman's (1991) six-item scale ($\alpha = .84$) to measure IJ (e.g., "My teacher treats me with kindness and consideration in regards to the scholarship").

Justice clarity. We developed justice clarity scales based on the aforementioned justice perception scales and reworded the items to fit our academic setting (items are listed in Appendix B). The items used to assess DJ clarity ($\alpha = .74$) and PJ clarity ($\alpha = .76$) were adapted from Colquitt's (2001) scales, whereas the items used to assess IJ clarity ($\alpha = .79$) were adapted from Moorman's (1991) scale.

¹ The pattern of results replicated when we reran analyses, this time using a mean-split to create old and young subsamples that were equivalent in size. These results are available upon request from the first author.

Variable	М	SD	1	2	3	4	5	6	7
1. Gender	0.45	0.50	_						
2. Education	2.71	0.68	.05*						
3. Job tenure	2.15	3.13	.13***	05^{*}	_				
4. Wage (logarithm)	7.54	0.32	.19***	.23***	.25***				
5. Generation	0.87	0.34	12***	.14***	35***	09^{***}	_		
6. Interactional justice	3.32	0.87	03	02	.00	.05**	05^{*}	_	
7. Distributive justice	3.08	0.94	05^{*}	09^{***}	10***	.02	00	.62***	_
8. Procedural justice	3.21	0.92	06**	10^{***}	06**	01	06^{**}	.59***	.52***
$N_{oto} = 0.020$									

Table 1 Means, Standard Deviations, and Correlations for the Variables in Study 1

Note.

Note. N = 2,232.* p < .05. ** p < .01. *** p < .001.

As these items were developed specifically for this study, we assessed their construct validity in a separate sample (Hinkin, 1998). We examined relations of justice monitoring (i.e., efforts to gather and process fairness information; Long, Bendersky, & Morrill, 2011) with both justice clarity and justice perceptions. Justice monitoring enables people to acquire more justice information (Long et al., 2011); thus, it should be positively related to justice clarity and have stronger relations with clarity than with justice perceptions (i.e., judgments of fairness could increase or decrease when more information is acquired). Seventy-five Chinese employees were recruited via an online survey service provider. Half the participants were female (51%), average age was 30 years, and average work experience was 3 years. Justice clarity and perceptions were measured with the same scales described above, revised to fit the employment setting ($\alpha = .73, .77$, and .77 for DJ, PJ, and IJ clarity, respectively; $\alpha = .82, .76$, and .72 for DJ, PJ, and IJ perceptions, respectively). Fairness monitoring was assessed with Long et al.'s (2011) scales. Five items ($\alpha = .77$) assessed DJ monitoring (e.g., "I actively monitor whether or not my supervisor fairly rewards me for the performance I achieve"), five items ($\alpha =$.72) assessed PJ monitoring (e.g., "I actively monitor whether or not my supervisor fairly applies organizational policies"), and six items ($\alpha = .79$) assessed IJ monitoring (e.g., "I actively monitor whether or not my supervisor treats me in a dignified manner").

Results revealed that DJ monitoring had a stronger relationship with DJ clarity (r = .45, p < .01) than DJ perception (r = .12, ns), t(74) = 14.48, p < .01 (differences in correlations were tested with Cohen & Cohen's 1983 method); PJ monitoring had a stronger relation with PJ clarity (r = .59, p < .01) than PJ perception (r =.09, ns), t(74) = 19.70, p < .01; and IJ monitoring had a stronger relation with IJ clarity (r = .51, p < .01) than IJ perception (r =.28, p < .05, t(74) = 7.59, p < .01. As expected, compared to justice perceptions, justice clarity is more strongly associated with justice monitoring. These results offer supportive evidence for the convergent and discriminant validity of the justice clarity scales.

Control variables. We controlled for gender (0 = female; 1 = 1)male) and age (in years) due to their established associations with fairness perceptions (Cohen-Charash & Spector, 2001).

Results and Discussion

Table 3 reports the means, standard deviations, and correlations among the focal variables. As shown in the table, the correlations between justice clarity and perception were small (r < .35 for all), suggesting they are distinct constructs. To further test this idea, we conducted a CFA on DJ, PJ, and IJ perception and clarity. The six-factor model fit the data best based on commonly used indices (Hu & Bentler, 1999), $\chi^2(419) = 738.57$, p < .001; SRMR = .06,

Table 2

Relations of I	Interactional .	Justice	With	Distributive	and	Procedural	Justice	in	Study	, 1

Distribut	ive justice	Procedur	al justice
Model 1	Model 2	Model 3	Model 4
02	02	03 [†]	03*
09^{***}	09^{***}	09^{***}	08^{***}
11***	10^{***}	06^{**}	07^{***}
.03†	.03†	01	01
.61***	$.78^{***}$.59***	.70***
	.01		04^{*}
	18^{***}		12^{*}
.40	.40	.37	.37
	$.004^{***}$		$.004^{*}$
295.40***	214.33***	256.90***	186.42***
	Distribut Model 1 02 09**** 11**** .03 [†] .61**** .40 295.40****	$\begin{tabular}{ c c c c } \hline Distributive justice \\ \hline \hline Model 1 & Model 2 \\ \hline02 &02 \\09^{***} &09^{***} \\11^{***} &10^{***} \\ .03^{\dagger} & .03^{\dagger} \\ .61^{***} & .78^{***} \\ .01 \\ & & .01 \\ & &18^{***} \\ .40 & .40 \\ .004^{***} \\ 295.40^{***} & 214.33^{***} \\ \hline \end{tabular}$	$\begin{tabular}{ c c c c c c } \hline Distributive justice & Procedur \\ \hline \hline Model 1 & Model 2 & \hline Model 3 & \\ \hline02 &02 &03^{\dagger} & \\09^{***} &09^{***} &09^{***} & \\11^{***} &10^{***} &06^{**} & \\ .03^{\dagger} & .03^{\dagger} &01 & \\ .61^{***} & .78^{***} & .59^{***} & \\ .01 & & & \\ .01 & & & \\ .40 & .40 & .37 & \\ .004^{***} & & \\ 295.40^{***} & 214.33^{***} & 256.90^{***} & \\ \hline \end{tabular}$

Note. N = 2,232. Standardized regression coefficients are reported. Generation: 0 = old generation; 1 = newgeneration. For Model 2, the ΔR^2 was calculated based on the R^2 in Model 1. For Model 4, the ΔR^2 was calculated based on the R^2 in Model 3. [†] p < .10. ^{*} p < .05. ^{***} p < .01. ^{****} p < .001.



Figure 2. The moderating effect of distributive justice clarity in Study 1.

RMSEA = .06, CFI = .87, and had significantly better fit than five alternative models in which corresponding clarity and perception variables were combined (these results are available upon request from the first author). Thus, we concluded that the justice clarity variables are distinguishable from the justice perception variables.

Hypotheses 1–3 predict that relations of one type of justice with the other two types of justice will be stronger when one is clear and the other two are ambiguous, as opposed to when all three are clear. Testing these predictions therefore requires an extreme group design in which the differences between clear and ambiguous conditions are maximized. Following prior relevant literature (e.g., Farh, Lee, & Farh, 2010; Ragins, Singh, & Cornwell, 2007; Tsui, Pearce, Porter, & Tripoli, 1997), we used a mean split method to separate each type of justice into clear versus ambiguous groups based on their clarity. This produced eight conditions (see Table 4). Although splitting up participants into conditions results in loss of variance (MacCallum, Zhang, Preacher, & Rucker, 2002), creating these eight conditions enabled us to test Hypotheses 1-3 by isolating cases where information is ambiguous on pairs of justice variables. Hypothesis 1 is supported if relations of DJ with PJ and IJ are stronger when DJ is clear and the other two justices are ambiguous, versus when all three are clear (Condition 4 vs. 1). Hypothesis 2 is supported if relations of PJ with DJ and IJ are stronger when PJ is clear and the other two justices are ambiguous, versus when all three are clear (Condition 6 vs. 1). Last, Hypothesis 3 is supported if relations of IJ with DJ and PJ are stronger when IJ is clear and the other two justices are ambiguous, versus when all three are clear (Condition 7 vs. 1). We dummy coded the two conditions in a comparison (Condition 1 was coded as 0 = all information is clear, and Conditions 4, 6, and 7 were coded as 1 = only DJ, PJ, or IJ information, respectively, is clear), resulting in three dummy variables (Dummy 1, Dummy 2, and Dummy 3, respectively). Regression analyses were used to test whether relations among pairs of justice variables (e.g., DJ and PJ) were moderated by the relevant dummy variable (e.g., Dummy 1). If the interaction term has a positive moderating effect, the justice with clear information has stronger effects on the other two justices when they are ambiguous versus clear.

Model 2 in Table 5 indicated that the moderating effect of Dummy 1 was marginally significant ($\beta = .20, p < .10$), which is illustrated in Figure 4. Consistent with Hypothesis 1a, the positive

relation between DJ and PJ was stronger when only DJ was clear ($\beta = .58, p < .05$) versus all three types of justice were clear ($\beta = .30, p < .05$). In Model 4, the moderating effect of DJ clarity was not significant when predicting IJ ($\beta = .12, ns$). Thus, Hypothesis 1 received partial support.

Model 6 in Table 5 showed that the moderating effect of Dummy 2 was significant ($\beta = .30$, p < .01). As illustrated in Figure 5, the positive relation between PJ and DJ was stronger when only PJ was clear ($\beta = .70$, p < .01) versus all three justices were clear ($\beta = .30$, p < .05). In Model 8, the moderating effect of PJ clarity when predicting IJ was not significant ($\beta = .09$, ns). Thus, Hypothesis 2 was partially supported.

Model 10 in Table 5 indicated that the moderating effect of Dummy 3 was marginally significant ($\beta = .25, p < .10$), which is illustrated in Figure 6. Consistent with Hypothesis 3a, the relation between IJ and DJ was stronger when only IJ was clear ($\beta = .80, p < .01$) versus all three justices were clear ($\beta = .38, p < .01$). The moderating effect was also significant in Model 12 ($\beta = .38, p < .01$), which is also illustrated in Figure 6. IJ and PJ had a stronger relation when only IJ was clear ($\beta = .83, p < .001$) versus all three justices were clear ($\beta = .83, p < .001$) versus all three justices were clear ($\beta = .28, p < .001$) versus all three justices were clear ($\beta = .28, p < .001$) versus all three justices were clear ($\beta = .28, p < .05$). Hypothesis 3 therefore received full support.

Using a field study, Study 2 provided partial support for Hypotheses 1 and 2 and full support for Hypothesis 3. In brief, people appear to rely more on justice with clear information to infer other types of justice for which information is ambiguous. We found that justice clarity is different from justice perceptions and that directly measuring justice clarity allows prediction of the magnitude of substitutability effects. A limitation of Studies 1 and 2, however, is their correlational design, which prohibits causal inferences and restricts control over the clarity of justice information. To redress these limitations in Study 3, we used an experimental design and manipulated justice clarity as well as justice perception (i.e., high vs. low justice) for the focal justice with high clarity. We also examined the moderating effects of need for cognitive closure to evaluate Hypothesis 4.

Study 3

Method

Sample and procedures. One hundred and fifty-five alumni from a southern university in China who were employed across



Figure 3. The moderating effect of procedural justice clarity in Study 1.

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Table 3Means, Standard Deviations, and Correlations for the Variables in Study 2

		5		-					
Variables	М	SD	1	2	3	4	5	6	7
1. Gender	0.54	0.50	_						
2. Age	20.93	1.75	.15*						
3. Distributive justice clarity	3.06	0.78	10	.01					
4. Procedural justice clarity	2.93	0.69	.02	.01	.53***	_			
5. Interactional justice clarity	3.07	0.71	03	04	.38***	.56***			
6. Distributive justice	3.38	0.64	.00	17**	.26***	.14*	.09		
7. Procedural justice	3.17	0.62	.08	23***	.12†	.16*	.16*	.56***	_
8. Interactional justice	3.23	0.61	15*	21***	.22***	.21**	.33***	.38***	.48***

Note. N = 242.

 $^{\dagger} p < .10. ~^{*} p < .05. ~^{**} p < .01. ~^{***} p < .001.$

different organizations were invited to participate in our study, of whom 137 responded (for a response rate of 88%). Participation was voluntary, confidentiality was guaranteed, and they were compensated (with prepaid mobile phone card equivalent to 5 U.S. dollars) in exchange for their participation. Thirty-nine percent of participants were female, average age was 24 years, average working experience was 2 years, and nearly all (99%) had a bachelor's degree or higher. A link to our survey was sent to their e-mail addresses. At first, participants' need for cognitive closure was assessed. Furthermore, participants read a scenario in which justice clarity and fairness on the focal high-clarity justice was manipulated and then responded to questions that assessed perceived justice and demographic information.

Scenarios and experimental manipulations. We created annual bonus allocation scenarios that resembled those encountered in real workplace contexts. Initial versions of the scenarios were sent to three managers in different organizations for feedback regarding the clarity, realism, and length of the scenarios. Minor revisions were made based on their comments. We manipulated DJ, PJ, or IJ clarity in the scenario, resulting in a 3 (DJ, PJ, or IJ clarity) \times 2 (clearly high vs. clearly low) factorial design. Participants were randomly assigned into one of the six conditions, in which information on only one type of justice was clear and information on the other two types of justice was ambiguous.

Clearly high versus clearly low DJ. We manipulated DJ clearly high (Scenario A, n = 34) versus clearly low (Scenario B, n = 20). In both scenarios, participants were told, "You are a salesperson in the marketing department of a software company. You worked very hard in the last year and achieved 110% of your sales goal. What's more, in your department, 90% employees just achieved 100% of their sales goals. A few employees did not

achieve their goals (they achieved about 90% of the sales goal), while another few employees' performance was beyond their goals. The company distributed the annual bonus based on the performance evaluation from your supervisor and clients."

Next, in the clearly high DJ condition (Scenario A), participants read, "You got the first grade of annual bonus, which was RMB50,000 (equivalent to US\$8,050). In your department, only 5% of the staff got the first grade of annual bonus (RMB50,000), 60% of the employees got the second grade (RMB30,000, or US\$5,635), and 35% of the employees got the third grade (RMB15,000, or US\$2,415)." In the clearly low DJ condition (Scenario B), participants were told that "You got the third level (the lowest level) of annual bonus, which was RMB15,000," while the remaining of the scenario was identical to Scenario A. Specific information regarding procedures and interpersonal treatment was not given in these two scenarios; thus, PJ and IJ were ambiguous.

Clearly high versus clearly low PJ. We manipulated PJ clearly high (Scenario C, n = 22) versus clearly low (Scenario D, n = 23). In both scenarios, participants were told, "You are a salesperson in the marketing department of a software company. You worked very hard last year and achieved 103% of your sales goal. What's more, in your department, you do not know your colleagues' performance. You just know that you all worked hard. Thus, you don't know whether you worked harder than your colleagues (on average). The company distributed the annual bonus based on the performance evaluation from your supervisor and clients. You got the second grade of annual bonus, which was RMB30,000. In your department, 30% of the staff got the first grade of annual bonus (RMB50,000), and 35% of the employees were in the third grade (RMB15,000)." We changed the percentage num-

Table 4Conditions Based on Justice Clarity in Study 2

Condition	Ν	Distributive justice	Procedural justice	Interactional justice
Condition 1	56	Clear	Clear	Clear
Condition 2	23	Clear	Clear	Ambiguous
Condition 3	9	Clear	Ambiguous	Clear
Condition 4	16	Clear	Ambiguous	Ambiguous
Condition 5	36	Ambiguous	Clear	Clear
Condition 6	26	Ambiguous	Clear	Ambiguous
Condition 7	16	Ambiguous	Ambiguous	Clear
Condition 8	60	Ambiguous	Ambiguous	Ambiguous
			*	

	High	distributiv	ve justice c	larity	High	n procedura	al justice c	larity	Hig	h interactio	nal justice c	larity
	Procedur	al justice	Intera jus	ctional tice	Distributi	ve justice	Intera jus	ctional tice	Distribut	ive justice	Procedur	al justice
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Gender	.15	.15	16	16	16^{\dagger}	14	16	15	.04	.05	.23*	.22*
Age	02	.02	01	.01	04	03	11	11	09	05	07	01
Distributive justice	.34**	.28*	.39***	.37**								
Dummy 1		11		16								
Distributive Justice \times												
Dummy 1		.20†		.12								
Procedural justice					.58***	.28*	.47***	.33*				
Dummy 2						28**		23*				
Procedural Justice ×												
Dummy 2						.30**		.09				
Interactional justice									54***	.37**	.50***	.30*
Dummy 3										14		.00
Interactional Justice X												
Dummy 3										.25†		.38**
R^2	.13	.18	.19	.22	.35	.49	.25	.30	.31	.39	.29	.38
ΛR^2		05†	,	.03		14**		.05		.08†		09**
F	3.48*	2.80*	5.22**	3.76**	13.71***	14.52***	8.58***	6.66***	1.35***	8.47***	9.04***	7.96***

Table 5Regression Results in Study 2

Note. When distributive justice is clear, N = 72; when procedural justice is clear, N = 82; when interactional justice is clear, N = 72. Standardized regression coefficients are reported. Dummy 1: 0 = all types of justice are clear; 1 = only distributive justice is clear and the other two types of justice are ambiguous. Dummy 2: 0 = all types of justice are clear; 1 = only procedural justice is clear and the other two type of justice are ambiguous. Dummy 3: 0 = all types of justice are clear; 1 = only procedural justice is clear and the other two type of justice are ambiguous. Dummy 3: 0 = all types of justice are clear; 1 = only procedural justice is clear and the other two types of justice are ambiguous. Dummy 3: 0 = all types of justice are clear; 1 = only interactional justice is clear and the other two types of justice are ambiguous. The procedural justice is clear and the other two types of justice are ambiguous.

bers presented in the PJ scenarios compared to the DJ scenarios to make the resource allocations less extreme, so as to lessen the clarity of DJ information, because especially favorable and unfavorable outcomes are typically viewed as fair and unfair, respectively (Brockner & Wiesenfeld, 1996). In addition, participants did not know how their effort and performance compared with those of their colleagues. Thus, the cues for DJ were absent.

The literature on organizational justice suggests that voice and accurate information are two key criteria for evaluating PJ (Colquitt, 2001; Leventhal, 1980). Therefore, we used these two criteria in our PJ clarity manipulation. In the clearly high PJ condition (Scenario C), participants read that they could voice their concerns about the performance evaluation procedure and influence the results of the annual bonus, and that the performance

evaluation was based on accurate information. In the clearly low PJ condition (Scenario D), participants read that they were unable to voice concerns about the performance evaluation procedure, lacked influence over results of the annual bonus, and the performance evaluation was based on incomplete information.

Clearly high versus clearly low IJ. We manipulated IJ clearly high (Scenario E, n = 18) versus clearly low (Scenario F, n = 20). In the first part of both scenarios, participants were told the same information as in the first part of the PJ scenarios (Scenarios C and D); thus, they did not have clear information regarding DJ. In the clearly high IJ condition (Scenario E), participants were told that their supervisor treated them with respect and politeness and provided feedback about their performance evaluation in a timely manner. In the clearly low IJ condition (Scenario F), participants



Figure 4. The moderating effect of Dummy 1 in Study 2.



Figure 5. The moderating effect of Dummy 2 in Study 2.



Figure 6. The moderating effects of Dummy 3 in Study 2. Panel A shows the moderating effect of Dummy 3 on the relationship between interactional and distributive justice, and Panel B depicts the moderating effect of Dummy 3 on the relationship between interactional and procedural justice.

were told that their supervisor mistreated and verbally abused them and did not provide feedback about their performance evaluation. Specific information about procedures was not provided in either scenario, and PJ was thus ambiguous.

Measures.

Justice perceptions. We used the same scales as in Study 2 to measure DJ ($\alpha = .89$), PJ ($\alpha = .73$), and IJ ($\alpha = .84$), modified to reflect the annual bonus context in Study 3.

Need for cognitive closure. We used Webster and Kruglanski's (1994) 42-item scale to measure need for cognitive closure ($\alpha = .83$; e.g., "I think that having clear rules and order at work is essential to success" and "I do not like situations that are uncertain"). Participants responded to the items on a 6-point Likert scale (1 = *Strongly Disagree*, 6 = *Strongly Agree*).

Manipulation checks. We used nine items to verify the efficacy of our justice clarity manipulation. Three items ($\alpha = .71$) assessed DJ clarity: "Compared with my colleagues, whether the amount of the annual bonus I received is fair is obvious," "I do not know whether the amount of the annual bonus I received is fair" (reverse-coded), and "I don't know whether I worked harder than my colleagues" (reverse-coded). These items refer to employees' knowledge of their inputs and outputs, reflecting their DJ clarity. Three items ($\alpha = .65$) assessed PJ clarity: "Although I know that I received an annual bonus, in fact, I do not know how the evaluation score was calculated" (reverse-coded), "I know clearly about the specific criteria on which the evaluation for annual bonus was based," and "I do not know the accuracy of my supervisor and clients' evaluation"(reverse-coded). These items assess employees' understanding of and involvement in the procedures used to determine the bonus, which reflects PJ clarity. Last, three items (α = .87) assessed IJ clarity: "I know whether my supervisor considered my rights as an employee in the evaluation process," "I know whether my supervisor treated me sincerely," and "Although I know that I received an annual bonus, in fact, I am not sure whether my supervisor politely considered my viewpoint" (reverse-coded). These items assess participants' awareness of the treatment they received during the evaluation process, which reflects IJ clarity. To verify that the items are properly aligned with the intended type of justice clarity, we recruited two organizational behavior scholars and three doctoral candidates to complete a sorting task. These experts were provided definitions of the three types of justice clarity and then instructed to categorize each item as tapping DJ, PJ, or IJ clarity (see Hinkin, 1998). Results of the sorting task across all experts were consistent with our categorization scheme, providing support for the validity of these items.

Results and Discussion

Effectiveness of the manipulations. Prior to testing the hypotheses, we examined whether the manipulations were effective. In Scenario A (clear and high DJ), participants reported higher DJ (M = 3.57, SD = .88) than they did in Scenario B (clear and low DJ condition; M = 2.20, SD = .72), t(52) = 5.90, p < .001. Furthermore, we conducted paired sample *t* tests to verify that DJ is clearer than PJ and IJ. Participants in Scenarios A and B reported that DJ (M = 3.11, SD = .69) was clearer than PJ (M = 2.56, SD = 1.16), t(53) = 3.18, p < .01, and IJ <math>(M = 2.72, SD = .84), t(53) = 2.36, p < .05. These results indicate that our DJ manipulations were successful.

In Scenario C (clear and high PJ condition), participants reported higher PJ (M = 3.45, SD = .52) than did those in Scenario D (clear and low PJ condition; M = 2.70, SD = .50), t(43) = 4.95, p < .001. Furthermore, participants in Scenarios C and D reported that information about PJ (M = 3.36, SD = 1.03) was clearer than information about DJ (M = 2.47, SD = .64), t(44) = 5.14, p < .001, and IJ (M = 2.91, SD = .82), t(44) = 2.51, p < .05. The PJ manipulations were therefore deemed successful.

Last, in Scenario E (clear and high IJ condition), participants reported higher IJ (M = 3.37, SD = .52) than did those in Scenario F (clear and low IJ condition; M = 2.24, SD = .56), t(36) = 6.40, p < .001. Furthermore, based on paired sample t tests, participants in Scenarios E and F reported that IJ (M = 2.80, SD = .80) was clearer than DJ (M = 2.33, SD = .53), t(37) = 4.07 p < .001, and PJ (M = 2.24, SD = 1.17), t(37) = 2.98, p < .01. These results indicated that the IJ manipulations were successful.

Tests of the hypotheses. Reported in Table 6 are the means, standard deviations, and correlations for the focal variables. Regarding the distinctiveness of the three types of justice, CFA results indicated that the three-factor model, $\chi^2(116) = 270.07$, p < .001; SRMR = .08, RMSEA = .10, CFI = .85, had a better fit than the two-factor model that combined PJ and IJ, $\chi^2(118) = 333.25$, p < .001; SRMR = .09, RMSEA = .12, CFI = .79; $\Delta \chi^2 = 63.18$, $\Delta df = 2$, p < .001, and the one-factor model,

0 Table

Table 6 Means, Standard Deviations, and Correlations in Study 3

Variable	М	SD	1	2	3	4
1. Distributive justice	3.25	0.91	_			
2. Procedural justice	2.88	0.65	.49***			
3. Interactional justice	2.71	0.76	.42***	.52***	_	
4. Need for cognitive closure	3.78	0.32	05	.12	.08	_

Note. N = 137.

 $\chi^{2}(119) = 540.03, p < .001; SRMR = .11, RMSEA = .16, CFI =$.59; $\Delta \chi^2 = 269.96$, $\Delta df = 3$, p < .001. This suggested that the three types of justice are distinguishable from each other.

We conducted multivariate regression analyses to test our hypotheses. First, we tested the effect of clear DJ on ambiguous PJ and IJ (Scenarios A and B). As shown in Model 1 of Table 7, DJ had a significant effect on PJ (b = .46, p < .05), such that higher PJ was perceived in the clearly high DJ condition (M = 2.97, SD = .68) rather than in the clearly low DJ condition (M = 2.51, SD = .59, F(1, 52) = 6.43, p < .05. DJ also impacted IJ (Model 3: b = .66, p < .01), as greater IJ was perceived in the clearly high (M = 2.81, SD = .76) versus clearly low DJ condition (M = 2.15, M)SD = .52, F(1, 52) = 11.64, p < .01. These results provided full support for Hypothesis1. In addition to finding these main effects, we found that need for cognitive closure interacted with DJ to influence both PJ (b = 1.01, p < .10) and IJ (b = 2.03, p < .001; see Table 7, Models 2 and 4, respectively). These interactions are illustrated in Figure 7, which indicates that the effects of DJ on PJ and IJ are stronger when need for cognitive closure is high versus low. Thus, Hypothesis 4 received full support with respect to clear DL

As shown in Table 7, PJ influenced both DJ (Model 5: b = .80, p < .001) and IJ (Model 7: b = .75, p < .001). Participants reported higher DJ (M = 3.87, SD = .64) and IJ (M = 3.20, SD =.79) in the clearly high PJ condition than the clearly low PJ condition (DJ: M = 3.20, SD = .78, F(1, 43) = 14.17, p < .001; IJ: M = 2.45, SD = .50, F(1, 43) = 14.73, p < .001). The results were therefore consistent with Hypothesis 2. There was also an interaction effect, such that need for cognitive closure moderated the effects of PJ on DJ (Model 6: b = 1.17, p < .10) but not on IJ (Model 8: b = .55, ns). As shown in Figure 8 and in line with Hypothesis 4, the effect of PJ on DJ is stronger when need for cognitive closure is high than when it is low.

Last, clear IJ had positive effects on DJ (Model 9: b = .71, p <.01) and PJ (Model 11: b = .38, p < .05). Participants perceived higher DJ (M = 3.64, SD = .58) and PJ (M = 2.97, SD = .46) in the clearly high IJ condition than in the clearly low IJ condition (DJ: M = 2.93, SD = .70, F(1, 36) = 11.46, p < .01; PJ: M =2.59, SD = .63, F(1, 36) = 4.38, p < .05). Thus, Hypothesis 3 was supported. In terms of the interactions, need for cognitive closure moderated the effects of IJ on DJ (Model 10: b = 1.26, p < 1.26.10) but not on PJ (Model 12: b = .16, ns). In line with Hypothesis 4, the effect of IJ was stronger when need for cognitive closure was high than when it was low (see Figure 9).

Using a scenario-based experiment, we replicated the results of the previous two studies in Study 3, providing converging evidence for Hypotheses 1-3. Specifically, when information regard-

		Effects of dist.	ributive justice			Effects of pro	cedural justice			Effects of inter-	actional justice	
	Procedur	al justice	Interaction	nal justice	Distributiv	/e justice	Interaction	al justice	Distributiv	e justice	Procedury	l justice
Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12
Intercept Distributive justice Need for cognitive closure	2.51^{***} (0.14) 0.46 [*] (0.18)	$\begin{array}{c} 2.49^{****} \ (0.15) \\ 0.56^{***} \ (3.08) \\ 0.11 \ (0.27) \end{array}$	2.15^{***} (0.15) 0.66^{**} (0.19)	$\begin{array}{c} 2.23^{****} (0.14) \\ 0.69^{****} (0.18) \\ -0.60 (0.40) \end{array}$	3.08^{****} (0.15)	3.00*** (0.16)	2.45*** (0.14)	2.46*** (0.15)	2.92*** (0.15)	2.98^{***} (0.14)	2.59*** (0.12)	2.60*** (0.13)
Distributive Justice \times Need for Cognitive Closure		1.01 ⁺ (1.82)		2.03^{***} (0.55)								
Procedural justice Need for cognitive closure					0.80^{***} (0.21)	$\begin{array}{c} 0.80^{***} \ (0.23) \\ -0.60 \ (0.43) \end{array}$	0.75^{***} (0.19)	$\begin{array}{c} 0.66^{**} \ (0.21) \\ 0.06 \ (0.40) \end{array}$				
Procedural Justice × Need for Cognitive Closure						1.17 [*] (0.66)		0.55 (0.62)				
Interactional justice Need for cognitive closure									0.71** (0.21)	$\begin{array}{c} 0.67^{**} \ (0.21) \\ -0.99^{\dagger} \ (0.50) \end{array}$	$0.38^{*} (0.18)$	$\begin{array}{c} 0.37^{\dagger} \ (0.19) \\ -0.15 \ (0.45) \end{array}$
Interactional Justice \times Need for Cognitive Closure										1.26^{\dagger} (0.70)		0.16 (0.63)
, N	54	54	54	54	45	45	45	45	38	38	38	38
R^2	.11	.24	.18	.39	.25	.30	.26	.29	.24	.33	11.	11.
ΔR^2		.13 [†]		.21***		.05†		.03		⁺ 60.		00.
F	6.43^{*}	5.30^{**}	11.64^{**}	10.50^{***}	14.17^{***}	5.94^{**}	14.73^{***}	5.45**	11.46^{**}	5.47**	4.38^{*}	1.42

p < .001.

p < .01. ***

< .05.

< .10.

p < .001.



Figure 7. The moderating role of need for cognitive closure on the effects of distributive justice in Study 3. Panel A shows the moderating effect of need for cognitive closure on the relationship between distributive and procedural justice, and Panel B depicts the moderating effect of need for cognitive closure on the relationship between distributive and interactional justice.

ing one type of justice is clear and information for the other types is ambiguous, participants' judgments of the latter types of justice are influenced by the justice with clear information. Our experimental design verified the causal direction of these substitutability effects. Furthermore, the extent to which high-clarity justice influences ambiguous types of justice is moderated by need for cognitive closure. That is, when people have a strong desire for concrete information in order to reduce uncertainty (i.e., a high need for cognitive closure), substitutability effects tended to be stronger.

General Discussion

Although justice is typically treated as an independent variable, there is a need to understand how justice judgments are formed, especially when people lack clear, relevant information (van den Bos, 2003). Most studies investigating the effects of justice are based on the assumption that the information used to form justice judgment is available and clear (Janssen et al., 2011). This assumption, however, may not always hold, as employees often lack relevant information and cues with which to adequately evaluate



Figure 8. The moderating role of need for cognitive closure on the effects of procedural justice in Study 3.

all aspects of fairness (van den Bos, 2003). In the current research, we challenged this assumption by introducing the concept of justice clarity, which specifies the extent to which people have clear relevant information to make justice judgment. Building on FHT (Lind, 2001), our results suggest that when relevant information for specific types of justice is unclear or not available, employees rely on other types of justice with clear information to form judgments. Our results, which are based on a mix of different research designs and operationalizations, speak favorably with respect to the internal and external validity of our findings. Although the question of how people form fairness judgments when lacking clear information has been posed previously (e.g., Daly & Tripp, 1996; Janssen et al., 2011; Vermunt & Törnblom, 1996), our study is one of the first attempts at empirically and systematically addressing it. More important, we introduce the concept of justice clarity and bring needed attention to the important role of information availability and processing in the justice domain, which hitherto has been neglected. In sum, this research enriches the justice literature and deepens our understanding of justice perception formation, especially under uncertainty, which is a



Figure 9. The moderating role of need for cognitive closure on the effects of interactional justice in Study 3.

common occurrence. Our study also challenges the prevailing assumption that people always have clear and relevant information when judging justice.

Our results have important practical implications as well. In the workplace, there are likely to be occasions when managers are unable to provide clear information for all types of justice to employees. In these cases, ensuring that one kind of justice is clear and high can help improve employees' perceptions of less clear justice. Of course, this is not to suggest that managers need to exhibit only one kind of justice to employees. But when there are situations in which it would be costly or difficult to provide clear information on all three, managers could focus on a specific type of justice for which it is easy to provide clear information. Of the three types, IJ tends to be the most visible and salient (Scott et al., 2007), and DJ may be most prone to spillover effects, because experiences involving outcome allocations are relatively infrequent compared to social encounters and use of company policies and procedures.

Although we observed that each type of justice is capable of influencing the other two types, results were less consistent when IJ was an outcome. It is possible that the clarity of IJ tends to be high in most situations, as it is gleaned from all encounters that employees have with authority figures, even in the absence of resource allocation decisions (Scott et al., 2007). IJ information is also less contingent on social comparisons than are DJ and PJ; thus, employees do not require information about coworkers' experiences and outcomes to form fairness judgments (Bies, 2001; Patient & Skarlicki, 2010). As a result, effects of IJ may be asymmetrical, such that it is more likely to influence the other types of justice than vice versa. One practical implication of this finding is that authority figures ought to ensure that social interactions are perceived as fair, as it can spill over to color judgments of less obvious outcomes and procedures. Cultivating perceptions of IJ is relatively inexpensive in terms of time and effort; in its simplest form it requires that supervisors be respectful and provide explanations to employees (Cropanzano et al., 2007). Doing so can pay large dividends when perceptions of fair interactions are used as a surrogate for judging outcomes and procedures. Thus, we encourage further research on the relative clarity of DJ, PJ, and IJ information and how such information impacts justice judgments.

Moving beyond main effects, we also found some support for the prediction that need for cognitive closure moderated the magnitude of substitutability effects. These findings parallel the idea that people with high need for cognitive closure are more likely to rely on heuristics to inform their judgments, especially when facing incomplete information (de Dreu et al., 1999). When judging DJ under uncertainty, for example, high need for cognitive closure increases the salience of not-directly-related procedural or interactional information, which is then incorporated into fairness judgments. Given the complex information processing that drives justice judgments (Goldman & Thatcher, 2002), considering individual differences in information processing may prove useful. Our inclusion of need for cognitive closure represents a key contribution, as doing so extends Lind's (2001) seminal chapter on FHT by discussing the role of individual differences during the judgmental phase.

In addition, other processing-related variables, such as need for cognition and action identification, may be relevant to consider. For example, Johnson and Steinman (2009) found that justice

information was processed at more heuristic, implicit levels when need for cognition was low, whereas justice information received more deliberative, explicit attention when need for cognition was high. According to Goldman and Thatcher (2002), the depth at which justice information is processed may impact the strength and stability of justice perceptions and reactions. A possible direction for future research, then, is to examine whether the use of heuristics produces justice judgments that are enduring or short lived. It may be that judgments owing to substitutable effects are short lived, merely serving as placeholders until clear justice information becomes available. Alternatively, FHT posits that once justice judgments are formed, they are relatively stable, even when diverging information is encountered. These competing predictions ought to be examined by future research.

Limitations and Future Research Directions

A few limitations with the current research should be noted. First, the justice clarity scales and manipulations were developed specifically for this research. Although the scales were adapted from existing justice perception scales, there is limited empirical evidence regarding their psychometric properties. The scales did, however, show good internal consistency, and our primary and pilot study results indicated adequate convergent, discriminant, and criterion-related validity. Our manipulation of justice clarity might also be improved. For example, information relevant to DJ (e.g., bonus amount) was included in the PJ and IJ conditions, which may have inadvertently affected the efficacy of the manipulation. Although the manipulation checks appeared successful, we cannot rule out this possibility. Further refinement of these measures and manipulations is needed.

Second, we only focused on conditions in which one type of justice was clear and the other two types of justice were ambiguous. We did this in order to maximize the differences between the clear and ambiguous conditions, much like an extreme group design. Yet, in reality, other possibilities may exist. It is warranted for future research to explore other possible combinations. To this end, we conducted post hoc analyses on Study 2. When only DJ was ambiguous and PJ and IJ were clear (n = 36), the positive relation between DJ and PJ was β = .42, p < .05 (compared to $\beta = .30, p < .05$, when all three justices were clear), while the relation between DJ and IJ was $\beta = .31$, p < .10 (compared to $\beta =$.38, p < .01, when all three justices were clear). These results suggest that when DJ is ambiguous and the other two justices are clear, perceptions of DJ are more likely to be influenced by PJ than IJ, although further analyses indicated that these two relations (i.e., .42 vs. .31) were not significantly different.² These post hoc analyses point to new directions for future research. For instance, when only one type of justice is ambiguous and the other two are clear, it would be useful to know whether the ambiguous justice is more likely to be influenced by one or two types of clear justice. It is also important to explore how people form justice judgments when the two clear types of justice are in conflict (i.e., when one justice is clearly high whereas the other is clearly low).

² The results of analyses when only interactional justice was clear showed similar patterns (n = 23). When only procedural justice was clear, the sample size was too small to analyze.

Third, the sample sizes for the three studies varied a great deal, ranging from 2,232 in Study 1 to 137 in Study 3. Such variance may have impacted conclusions about the statistical significance of the results and could be responsible for some discrepant findings across these three studies. For example, the hypotheses tested in Study 1 (a substantially larger sample) were fully supported, despite small effect sizes, yet similar effects did not reach statistical significance in the other studies with smaller samples. Sample size and sufficient power to detect effects are of particular concern in Study 3 when testing need for cognitive closure as a moderator. We caution readers to keep these sample size differences in mind when reflecting on our results (see Aguinis et al., 2005; Cohen, 1992).

Finally, it should be noted that all of our samples were from China. Given our focus on basic information processing, it is unlikely that our findings reflect a phenomenon that is specific to a particular cultural context. For example, previous research that found support for heuristic-related effects on justice judgments included samples from the United States (Nicklin et al., 2011) and the Netherlands (van den Bos et al., 1997). Similarly, there is evidence that the use of more general heuristics (e.g., representativeness and availability heuristics) is relatively universal across cultures (Nisbett & Ross, 1980). However, although effects tend to be consistent, their magnitudes may differ across cultures. For instance, compared with Americans, Chinese engage in more holistic and context-dependent information processing (Nisbett, Peng, Choi, & Norenzayan, 2001), meaning that Chinese individuals are more attuned to the relations among different elements that share the same context or environment (Nisbett, 2003; Nisbett et al., 2001). This suggests that Chinese may be more reliant on or quicker to use substitutability heuristics to judge fairness (especially when information is ambiguous) than are Americans. If so, the effects we observed may reflect liberal estimates of substitutability effects. Cultures also differ in their uncertainty avoidance (Hofstede, Hofstede, & Minkov, 2010), which may also moderate the magnitude of the substitutability effects posited by FHT. Both China and the United States score low on uncertainty avoidance, indicating that people tend to be comfortable with uncertainty in these two cultures. There is a need, then, for more research that examines the universality of justice phenomena across cultures, including investigations into whether the substitutability effects we observed replicate to other samples that differ in contextdependent processing and uncertainty avoidance.

Despite these limitations, our study sheds new light on how justice judgments are formed in suboptimal conditions when information is either unavailable or ambiguous. Research on heuristics, as posited by FHT (Lind, 2001), and counterfactuals, as posited by fairness theory (Nicklin et al., 2011), may prove especially helpful to explore how such processes unfold. The current study provides some initial answers, and we hope it sparks further interest in this direction. One fruitful direction would be to examine other potential sources of information that employees use as heuristics when forming justice judgments, such as social information (Goldman & Thatcher, 2002; Jones & Skarlicki, 2005) and emotions (Barsky & Kaplan, 2007). An understanding of the various sources of information that inform justice judgments is a necessary step toward improving the management of fairness in organizations.

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Appendix A

Scale Items for the Three Types of Justice in Study 1

Distributive Justice

1. The rewards I received reflect my effort in the job.

2. Compared with my coworker in the same job, my salary is reasonable.

3. My wages reflect my contribution to my organizations.

4. Compared with my coworkers' job performance, my salary is reasonable.

Procedural Justice

1. The way salaries are distributed in our company is based on objective rules.

2. The way salaries are distributed in our company is open and transparent.

3. Distributive rules are implemented effectively.

4. All employees are equal before the distributive rules.

Interactional Justice

- 1. My supervisor treats me in an unbiased manner.
- 2. My supervisor provides me with support and help in the job.
- 3. My supervisor respects me.

4. If I have questions about the distribution results, my supervisor explains them to me patiently.

5. If I have questions about the distribution procedures and processes, my supervisor explains them to me completely.

6. The comment my supervisor gives me is appropriate.

7. I think my supervisor's explanations about the distribution results and procedures are reasonable.

8. My supervisor communicates with me about the distribution in a timely manner.

(Appendices continue)

Appendix **B**

Justice Clarity Items in Study 2

Distributive Justice Clarity

1. I know clearly whether my scholarship outcome reflects the effort I have put into my work.

2. I know clearly whether my scholarship outcome is appropriate for the work I have completed.

3. I know clearly whether my scholarship outcome reflects what I have contributed to the organization.

Procedural Justice Clarity

1. I know clearly whether I am able to express my views and feelings during those procedures used to determine scholarships.

2. I know clearly whether I have had influence over the scholarship outcome arrived at by those procedures used to determine scholarships.

3. I know clearly whether those procedures used to determine scholarships have been applied consistently.

4. I know clearly whether those procedures used to determine scholarships have been free of bias.

5. I know clearly whether those procedures used to determine scholarships have been based on accurate information.

6. I know clearly whether I have been able to appeal the scholarship outcome arrived at by those procedures used to determine scholarships.

Interactional Justice Clarity

1. I know clearly whether my teacher was able to suppress personal biases regarding the scholarship.

2. I know clearly whether my teacher provided me with timely feedback about the decision and its implications regarding the scholarship.

3. I know clearly whether my teacher showed concern for my rights as a student regarding the scholarship.

4. I know clearly whether my teacher considered my viewpoint regarding the scholarship.

5. I know clearly whether my teacher took steps to deal with me in a truthful manner regarding the scholarship.

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