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Current Empirical Research

# The relative importance of organizational justice dimensions on employee outcomes: a critical reanalysis using relative weights analysis

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**Abstract**

This study examined the collected research on the four dimensions of organizational justice (i.e., distributive, procedural, interpersonal, and informational) by reanalyzing data taken from Colquitt, Conlan, Wesson, Porter & Ng's (2001) meta-analysis. First, this study uses Relative Weight Analysis (RWA) to assess the relative predictive utility of the four justice dimensions on a set of employee outcomes; this analytic technique is better suited to examine this research question than traditional regression-based techniques. Second, this study examines how different operationalizations of procedural justice can lead to different patterns of results. For analyses using an expansive operationalization of procedural justice, the results of Colquitt, *et al.* (2001) are largely supported. However, for analyses using a narrower, more appropriate operationalization of procedural justice, results instead show that distributive justice is the most important dimension for predicting explained variance in most dependent variables, including outcome satisfaction, job satisfaction, organizational commitment, and withdrawal. This finding runs contrary to much of the accumulated justice literature; as such, this study raises conceptual, practical, and methodological concerns.

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**Keywords:** organizational justice; relative weight analysis; meta-analysis



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The goal of the current study is to provide a test of the four-factor model of organizational justice using Relative Weight Analysis (RWA) (Johnson, 2000), an analytic technique that is specifically designed to examine the proportionate contribution each predictor makes to  $R^2$ , considering both its direct effect and its effect when combined with the other variables in the regression equation. This is the first time this analytic technique has been applied to organizational justice literature. By doing so, the accumulated evidence for the validity of the four-factor model can be assessed against the evidence that questions the four-factor model and the marginal utility of each justice dimension.



### A review of the development of the four-factor model of organizational justice

There has been over 40 years of accumulated research into organizational justice. Prior to the research of Adams (1965), most justice research was concerned solely with the perceived favorability of decision outcomes. His research, as well as that of Thibaut and Walker (1975) expanded this view to incorporate social exchange (e.g., the input/outcome exchange which is part of the equity theory of employee motivation) and to examine the fairness and favorability of outcomes in legal decision processes – which became known as distributive justice. Leventhal (1980) further expanded this research to the organizational setting, and, more importantly, introduced the concept of procedural justice – the fairness of the process by which decisions are made. Specifically, Leventhal included the following in his conception of procedural justice: (a) consistency of decision making, (b) freedom from bias, (c) basing decisions on accurate information, (d) the ability to correct flawed decisions, (e) conformity with prevailing morals, and (f) consideration of the opinions of those affected by decisions.

In 1986, Bies and Moag introduced the concept of interactional justice, expanding the notion of justice to incorporate the way people are treated during a decision-making process. Greenberg (1993) forwarded the notion that this construct should be split into two separate constructs – interpersonal justice, which reflects how respectfully people are treated during decisions, and informational justice, which reflects how and how well the information regarding a decision process/outcome is explained to affected parties (see Colquitt *et al.*, 2005, for an excellent historical overview)

There has been extensive research on organizational justice in the years since these dimensions were introduced, and a general consensus has emerged of a four-dimensional distributive (based on outcomes), procedural (based on process), interpersonal (based on personal treatment), and informational (based on data-based explanation of decisions) understanding of organizational justice (Greenberg and Colquitt, 2005). For example, Colquitt (2001) developed measures of all four justice dimensions and found that a four-factor confirmatory model provided the best fit to the data. There is also considerable evidence that, despite some conceptual and measurement overlap, these dimensions of justice are best seen as distinct

but interrelated in meaningful ways (Brockner and Wiesenfeld, 2005). All four dimensions have been extensively studied; the validity and importance of these justice dimensions have stood the test of time and the peer-review scientific process.

These facets have been validated, have been distinguished from each other using factor analysis and other techniques (e.g., Alexander and Ruderman, 1987; Folger and Konovsky, 1989), and their relationships with outcome variables (such as satisfaction, commitment, retaliation, and decision acceptance) have been distinguished through regression analyses and structural equations modeling (e.g., Colquitt, 2001). This literature has been summarized by several meta-analyses (Cohen-Charash and Spector, 2001; Skitka *et al.*, 2003), including one which performed regression analyses based on the derived meta-analytic data (Colquitt *et al.*, 2001).

When looking at the accumulated literature, there is considerable conceptual and empirical evidence to support the notions that certain dimensions of justice should have larger effects on certain outcomes than other dimensions of justice (Cropanzano *et al.*, 2002; Conlan *et al.*, 2005; Moorman and Byrne, 2005). For instance, it is generally posited that distributive justice is closely associated with employee reactions tied closely to the decision itself, such as decision acceptance and outcome satisfaction. Similarly, procedural justice is generally seen to be closely associated with employee reactions aimed at the larger decision-making system (Bies, 2005), and often the organization itself (e.g., satisfaction with a reward system, organizational commitment). Interpersonal and informational justice are most often associated with employee reactions focused on the individual or agent who makes and explains decisions, often a supervisor (Cropanzano *et al.*, 2002; Bies, 2005). The preponderance of research on organizational justice suggests the following expectations:

- For outcome measures directed closely at the decision level, such as outcome satisfaction, distributive justice will be the most important predictor.
- For outcome measures directed at the supervisory (agent) or job-related level, such as evaluation of supervisor, withdrawal and job satisfaction, interpersonal and informational justice will be the most important predictors.
- For outcome measures directed at the system or organizational level, such as organizational



commitment and organizational citizenship behaviors, procedural justice will be the most important predictor.

### Questions regarding the validity of the four-factor model

One could question the accumulated research on the four-factor model of organizational justice for both methodological and theoretical reasons. From a methodological standpoint, justice research has been based exclusively on regression-based methods to test hypotheses (e.g., Cohen-Charash and Spector, 2001, used a comparison of correlation coefficients; Colquitt *et al.*, 2001, used hierarchical regression; and Cropanzano *et al.*, 2002, used canonical correlation). These techniques, as will be explained in more detail in the methods section, are prone to bias and, therefore, not the most appropriate analytic strategies for testing hypotheses aimed at determining the relative strength of prediction among independent variables (Nunnally and Bernstein, 1994). However, to date, no research on organizational justice (and little research in organizational behavior generally) has used analytic strategies specifically constructed to validly test such hypotheses (see Budescu, 1993, Behson, 2005, LeBreton *et al.*, 2007, and Johnson, 2004, for details and examples).

In this paper, I use Johnson's (2000) RWA procedure to provide such a statistical test; this is the most appropriate technique for explaining the relative contribution to  $R^2$  among multiple independent variables, taking into account both the direct effect and the effect of each variable when combined with the other variables in a regression equation. Because this technique has never before been applied to justice literature, the relative importance of the four dimensions of organizational justice on the explained variance in a number of important dependent variables remains unclear.

This is not simply a methodological question, however. While the accumulated literature is generally supportive of the four dimensions of organizational justice, this support is not universal. In particular, questions remain regarding the independence of justice dimensions (e.g., Sweeney and McFarlin, 1997; Bies, 2005), whether interpersonal and informational justice should be considered separately, or as a single "interactional justice" construct (Bies and Moag, 1986; Cropanzano *et al.*, 2007), and whether the role of distributive justice

had been underestimated (Skitka *et al.*, 2003). What remains most open to question is the marginal utility of different justice dimensions – whether the addition of another justice dimension accounts for incremental variance in important employee outcome variables (see Cohen-Charash and Spector, 2001). In fact, some have concluded that we may be better off studying "overall justice perceptions" as the four sub-dimensions may be seen as substitutable for each other in affecting employee attitudes and behaviors (see Ambrose and Arnaud, 2005). The goal of the current study is to provide a test of the four-factor model of organizational justice. In this way, evidence for the validity of the four-factor model can be assessed against evidence that questions the four-factor model and the marginal utility of each justice dimension.

## Methods

### Data set and measures

The Colquitt *et al.* (2001) meta-analysis of organizational justice research was chosen as the data set for this study because it is the most comprehensive recent quantitative review of this literature (including 183 published studies over 25 years) and contains full correlation information among all four dimensions of justice as well as a wide array of important consequences of justice. By comparison, the Cohen-Charash and Spector (2001) and the Skitka *et al.* (2003) meta-analyses do not include enough information to calculate a correlation matrix nor do they include all four dimensions of justice. Further, Colquitt *et al.* (2001) use their meta-analytic results as input into a series of hierarchical regression models in order to explore a number of research questions. Their results provide an excellent opportunity to compare the results of the RWA with those derived from less appropriate regression analyses. Most importantly, this meta-analysis is highly influential; a Google Scholar (2011) citation search reveals that this study has been cited in 1381 subsequent scholarly works in the decade since its publication.

Finally, the Colquitt *et al.* (2001) meta-analysis reports its results two ways: (a) without using meta-analytic techniques to correct correlations for attenuation due to unreliability, and (b) when correcting correlations for attenuation due to unreliability. As Johnson (2004) states, no study has yet been conducted that compares the results of an RWA using such a data set, and that it may be important to explore how consistent the results are



across these conditions. To my knowledge, no comparison has yet been conducted. The data set used in this study provides this opportunity. To be consistent with the meta-analysis, this study will use corrected correlation coefficients in the main body of the paper; for comparison purposes, the results when uncorrected correlation coefficients are used are contained in an appendix.

Measures are taken from Colquitt *et al.* (2001). Meta-analyses necessarily combine multiple operationalizations of a construct into their results. Thus, it is difficult to definitively identify how each variable in this study was measured. However, Colquitt and his colleagues devised a coding system in which pairs of authors had to agree on how each measure included in their study would be classified. Unfortunately, they do not provide much detail about the inclusion criteria and measures used for distributive, interpersonal, and informational justice.

They included five different operationalizations of procedural justice: (a) Process Control, which is one aspect of procedural justice, (b) Leventhal Criteria, which is based on Leventhal's (1980) six criteria mentioned earlier in this article, (c) Indirect Combination Measure, which includes procedural, informational, and interpersonal justice together, (d) Procedural Justice Fairness Perceptions (PJFP), which is a direct measure asking respondents solely about procedural fairness perceptions, and (e) Broadly Defined Procedural Justice (BDPJ), which combines all of the above.

Colquitt and Shaw (2005) maintain that precision in measuring organizational justice is important but sometimes overlooked, and that choice of operationalization can have far-reaching effects on research results. Therefore, the analyses in the present study are conducted using two operationalizations: BDPJ and PJFP. BDPJ is used because this is the operationalization Colquitt *et al.* (2001) used in the regression analyses that followed from their meta-analysis. Using the same operationalization allows for a direct comparison of their study with the present one; in essence, the results of two different analytic techniques (hierarchical regression vs RWA) are directly compared using the same data.

Thus, the use of BDPJ is valuable, despite the obvious multicollinearity problems associated with using a very broad operationalization of procedural justice that, by Colquitt *et al.* (2001) definition, explicitly includes measures not only of procedural justice, but also of interpersonal and informational

justice. BDPJ is suboptimal, as this operationalization introduces unnecessary multicollinearity and is less suitable for use in either regression-based or RWA approaches. As Colquitt's construct validation study (2001) found procedural justice to be distinct from interpersonal and informational justice, their choice of BDPJ seems inconsistent with common psychometric practice. Further, using the most precise and non-overlapping operationalizations of justice dimensions is called for by Colquitt and Shaw (2005), who criticized the contamination and "cross-pollination" (p. 123) inherent in measuring one dimension of justice with items strongly associated with other justice dimensions. Finally, Bies (2005) stated emphatically that "the empirical evidence provides a loud and clear answer to the question of whether interactional justice is merely a form of procedural justice – and that answer is 'no'" (pp. 94–95). Thus, BDPJ is seen as a less than optimal choice of procedural justice operationalization.

Because the present study also focuses on differentiating the predictive strength of the four justice dimensions in the most valid way possible, I also conduct analyses using the PJFP operationalization. According to Colquitt *et al.*'s (2001) description, PJFP contains the least overlap with other dimensions of organizational justice, as it contains only operationalizations of procedural justice that are distinct from interpersonal and informational justice. As will be discussed shortly, limiting multicollinearity is essential for regression-based analyses, and having distinct measures will also provide a more conservative analytical test of the four-factor model of organizational justice when RWA is used.

Colquitt *et al.* (2001) also included a number of employee outcome variables; all were self-reports. Of these outcome variables, I included outcome satisfaction, job satisfaction, organizational commitment, organizational citizenship behaviors, withdrawal, and evaluation of supervisor. These dependent variables are all widely studied, have a significant amount of variance explained by organizational justice, and were assessed by many studies contained in the meta-analysis (all  $k \geq 15$ , all  $n \geq 4414$ ).

Colquitt *et al.* (2001) do not provide full information on which operationalizations were included for their dependent variables – one hopes that the majority of included studies used established, validated measures, but it is possible that some might have used newly constructed, non-validated,



or single-item measures. This lack of information is a potential problem with both the original meta-analysis and, by extension, the present study.

### Analytic strategy

Traditional multiple regression maximizes prediction of a dependent variable by assigning weights to predictors in such a way that the sum of squares attributable to error is minimized (Nunnally and Bernstein, 1994). However, multiple regression does a poor job in sorting out the relative importance of different predictors, especially in the presence of multicollinearity (Johnson, 2000). Hierarchical regression is the most common regression-based method by which tests of incremental explanation of variance or marginal utility of predictors is conducted. However, regression, including stepwise and hierarchical approaches, as well as structural equations models which rely on both factor analytic and regression techniques, are susceptible to suppressor effects, overestimate the importance of the strongest predictors, underestimate the importance of the less important predictors, and allow slight differences in inter-predictor correlations to change the pattern of derived regression weights (Budescu, 1993; Johnson, 2000).

In response to the limitations of multiple regression to reliably and accurately determine the relative importance of predictors, a number of measures of relative importance have been introduced. Instead of focusing simply on a variable's incremental contribution to  $R^2$ , as is commonly assessed in hierarchical regression, measures of relative importance focus on a variable's relative contribution to  $R^2$ , taking into account both its unique contribution and its contribution in the presence of other predictors. Of these, Budescu's Dominance Analysis (Budescu, 1993; Azen and Budescu, 2003) and Johnson's RWA (Johnson, 2000, 2001) are seen as the most valid, as both: (a) contain no logical flaws in their development, (b) are expressed as a proportion of  $R^2$  attributable to each independent variable, and (c) consider both direct effects and effects considering the other independent variables in the model (Johnson, 2004; LeBreton *et al.*, 2007). In this way, these techniques correct for the effects of multicollinearity among predictors and more accurately determine each predictor's relative contributions to the explained variance of the dependent variable.

The four steps to conducting a RWA are: (a) transform predictors to uncorrelated variables that are maximally related to original predictors,

(b) regress dependent variable onto the new uncorrelated variables, (c) regress the original predictors onto the new uncorrelated variables, and (d) combine the indices from Step 2 with the indices from Step 3. Put more simply, this technique is analogous to the use of an orthogonal rotation during a factor analysis. The development and use of RWA is more fully described by Johnson (2000, 2001) and LeBreton *et al.* (2007).

In the present study, RWA is applied to the correlation matrices I derived from the Colquitt *et al.* (2001) meta-analysis (see Appendix A for these correlation matrices). Analyses were calculated using an SPSS syntax program composed by Dr. Jeff Johnson and run on the PASW18 (formerly SPSS) statistical software program. By using RWA, this study represents the first time this technique, the most appropriate for explaining the relative contribution to  $R^2$  among multiple independent variables, has been applied to organizational justice research.

## Results

### Comparing the results for the two different operationalizations of procedural justice

Table 1 reports the results of the RWA. Specifically, this table lists the total variance in each dependent variable explained by the four dimensions of organizational justice (the total  $R^2$ ), and then lists how much of this total  $R^2$  can be attributed to each of the four dimensions. Both the relative  $R^2$  for each dimension and the percentage of the total  $R^2$  are reported. There are two numbers reported in each cell of the table. The first number represents the results using the BDPJ operationalization, and the second represents the results using PJFP. Thus, by comparing the two sets of numbers, one can compare results across the two different operationalizations of justice.

Thus, looking at the second set of columns in Table 1, we can see that, when using BDPJ, all four dimensions, taken together, account for 43.7% of the total variance in job satisfaction. Further, 18.6% of the variance in job satisfaction is explained by procedural justice, representing 42.5% of the total  $R^2$  explained by all four dimensions.

Similarly, using the PJFP operationalization, we can see that all four dimensions, taken together, account for 35.2% of the total variance in job satisfaction. Further, 4.9% of the variance in job satisfaction is explained by procedural justice, representing 13.9% of total  $R^2$  explained by all four



**Table 1** Results of the relative weights analysis, showing the relative contribution to  $R^2$  of the four justice dimensions on employee outcome variables, data from the meta-analytic results of Colquitt *et al.* (2001)

	Raw relative weights		Relative weights as percentage of R-square		Raw relative weights		Relative weights as percentage of R-square		Raw relative weights		Relative weights as percentage of R-square	
	BDPJ	PJFP	BDPJ (%)	PJFP (%)	BDPJ	PJFP	BDPJ (%)	PJFP (%)	BDPJ	PJFP	BDPJ (%)	PJFP (%)
	<i>Outcome satisfaction</i>				<i>Job satisfaction</i>				<i>Organizational commitment</i>			
Procedural justice	0.111	0.164	27.2	34.8	0.186	0.049	42.5	13.9	0.214	0.060	50.3	21.4
Interpersonal justice	0.021	0.026	5.1	5.6	0.037	0.034	8.5	9.8	0.038	0.012	8.7	4.3
Information justice	0.033	0.034	8.2	7.3	0.064	0.074	14.8	20.9	0.037	0.032	8.6	11.3
Distributive justice	0.244	0.246	59.6	52.3	0.149	0.195	34.2	55.4	0.138	0.178	32.3	63.0
$R^2$	0.410	0.471			0.437	0.352			0.427	0.283		
	<i>Citizenship behaviors</i>				<i>Withdrawal</i>				<i>Supervisor evaluation</i>			
Procedural justice	0.014	0.024	15.6	24.8	0.164	0.075	37.4	21.4	0.121	0.114	21.2	19.8
Interpersonal justice	0.043	0.040	46.2	40.8	0.075	0.047	17.1	13.2	0.140	0.141	24.4	24.5
Information justice	0.029	0.028	31.7	28.4	0.041	0.039	9.4	11.0	0.167	0.169	29.2	29.4
Distributive justice	0.006	0.006	6.5	6.0	0.158	0.192	36.1	54.4	0.145	0.152	25.4	26.3
$R^2$	0.093	0.097			0.438	0.353			0.572	0.577		

Note: The first number in each cell is based on the Broadly Defined Procedural Justice (BDPJ) operationalization of procedural justice and the second is based on the Procedural Justice Fairness Perceptions (PJFP) operationalization.

dimensions. In this case, the choice of operationalization leads to a meaningful difference in the pattern of results. When using BDPJ, an admittedly expansive operationalization of procedural justice that overlaps with other dimensions of justice, it is not surprising that procedural justice explains the largest percentage of variance in job satisfaction. However, when a more limited and appropriate operationalization is used, distributive justice explains the most variance in job satisfaction.

When looking at the results in Table 1 that use the BDPJ operationalization of justice, it can be seen that procedural justice is the most important dimension of justice in explaining variance for job satisfaction (42.5% of explained variance accounted for (EVAF)) and organizational commitment (50.3% EVAF), and is as predictive as distributive justice in explaining variance in withdrawal (37.4% compared with distributive justice's 36.1%). Distributive justice is seen as the strongest predictor of outcome satisfaction (59.6% EVAF). Interpersonal (46.2% EVAF) and informational (31.7% EVAF) justice are primary predictors of organizational citizenship behaviors. The results are less clear for supervisor evaluation, as all four dimensions explain similar percentages of explained variance (ranging from 21.2% to 29.2%).

However, when looking at the results in Table 1 that use the PJFP operationalization of justice, a

strikingly different pattern of results emerge. Distributive justice is seen as the most important dimension of justice in explaining variance in outcome satisfaction (52.3% EVAF), job satisfaction (55.4% EVAF), organizational commitment (63.0% EVAF), and withdrawal (54.4% EVAF). Interpersonal (40.8% EVAF) and informational (28.4% EVAF) justice are still the most important predictors of organizational citizenship behaviors. As in the prior analysis, no single justice dimension emerged as most important in explaining supervisor evaluation (all dimensions explained from 18.9% to 28.8%).

In short, the major difference between the RWA results when the two different procedural justice operationalizations are used is that distributive justice is more important in explaining variance in job satisfaction, organizational commitment, and withdrawal when the PJFP operationalization is used instead of BDPJ. The results for all other dependent variables are very similar.

The muddled results for supervisor evaluation is most likely due to the very general nature of the dependent variable, which combined evaluations of one's real-life work supervisor (with whom the respondent probably has a long-term complex relationship) in organizational field studies with evaluations of an experimenter (with whom the respondent probably had one short-term interaction) in laboratory studies. Unfortunately, as



Colquitt *et al.* (2001) combined both types of studies and did not split out their results, the present study cannot differentiate between these studies either.

Although I did not proffer formal hypotheses in this study, these results defy expectations. As stated earlier, there is general consensus that distributive justice should be most important in explaining variables such as outcome satisfaction, which are related closely to the decision. However, it is also expected that procedural justice would be most predictive of outcome variables directed at the larger organization or system, such as organizational commitment or organizational citizenship behaviors, and that interpersonal and informational justice would be most predictive of outcome variables focused on supervisors or decision makers. While the differences are more substantive when PJFP is used, many of these predictions were not supported even when BDPJ is used.

#### Results of direct comparison with Colquitt *et al.*'s (2001) tests of unique variance

This paper's results can also be compared with those of Colquitt *et al.*'s (2001) regression-based analysis of the unique effects of the four justice dimensions on employee reaction variables (see Table 2). This analysis tested the meta-analytic results against three different models of organizational justice. These models are: Leventhal's (1980) distributive dominance model, which posited that distributive justice is the primary driver of all reactions; Sweeney and McFarlin's (1997) two-factor model, which predicted distributive justice person-referenced reactions (e.g., outcome satisfaction) and procedural justice would best predict system-referenced reactions (e.g., organizational commitment); and Bies and Moag's (1986) agent-system model, which predicts informational and interpersonal justice would best predict agent-referenced variables (e.g. supervisor evaluation) and procedural justice would predict system-referenced variables.

The dimensions of justice predicted to be most important in explaining variance in the various dependent variables according to each of the models are listed on the top rows of Table 2. The dimension of justice that Colquitt *et al.*'s (2001) found to be most important in explaining variance for each dependent variable, along with their reported percentage of unique explained variance (see their Table 6) for that primary justice dimension, is listed on the second row. The third and

fourth rows list the dimension of justice that this study found to be most important in explaining variance in each dependent variable, as well as its relative weight (this information was also conveyed in Table 1).

The reason I did not list the full quantitative results from Colquitt *et al.* (2001) alongside those of the present study is that the results were derived from different analyses. Tests of unique variance determine the effect of each justice dimension after completely accounting for (i.e., fully removing) the variance explained by all other dimensions, while RWA determines the proportionate contribution each predictor makes to  $R^2$ , considering both its direct effect and its effect when combined with the other variables in the regression equation. (It should be noted that Ambrose and Arnaud (2005) stated that the over-reliance on tests of unique variance has led to an emphasis on unique contributions to  $R^2$ , rather than acknowledging the shared variance among justice dimensions. One advantage of RWA is that it does account for both unique and shared variance.) As a result, Colquitt's results ranged from 0.00 to 0.09, while those of the present study are as large as 0.25. Thus, no true quantitative "apples to apples" comparison or test of statistical significance is feasible. As a result, readers should interpret these results conservatively and be sure to note the cautions included at the bottom of the table.

The most illuminating finding is the almost perfect correspondence between the meta-analytic results and the results of the present study that also utilized the BDPJ operationalization for procedural justice. In fact, they differ only very slightly in predicting supervisor evaluation, which, as mentioned earlier, is a problematic dependent variable. Overall, it could be said that the results of Colquitt *et al.* (2001) and the present study that also utilized the BDPJ operationalization for procedural justice are relatively invariant regardless of analytic method. Thus, fears that the four-factor model of justice was flawed due to methodological limitations appear largely unfounded.

In contrast, the results reported in Table 2, especially the lack of agreement between the data in Row 2 vs Rows 3 and 4, again demonstrate that results vary widely based on the choice of operationalization of procedural justice.

As can be seen in Table 2, the shaded cells contain results that are consistent with the respective model of organizational justice. In terms of the three models, the results using the PJFP

**Table 2** Results of the comparison between the results of Colquitt *et al.* (2001) and the present study as they relate to three established models of organizational justice

	Outcome satisfaction	Job satisfaction	Organizational commitment	Citizenship	Withdrawal	Supervisor evaluation
<i>Leventhal's (1980) Distributive Dominance</i>						
Model prediction	DJ	DJ	DJ	DJ	DJ	DJ
Colquitt <i>et al.</i> BDPJ	DJ (0.18)	PJ (0.11)	PJ (0.09)	Intj <sup>a</sup> (0.02)	DJ (0.16)	DJ <sup>a</sup> (0.06)
This study BDPJ	DJ (0.244)	PJ (0.186)	PJ (0.214)	Intj (0.043)	DJ <sup>a</sup> (0.158)	Infoj <sup>b</sup> (0.167)
This study PJFP	DJ (0.246)	DJ (0.195)	DJ (0.178)	Intj (0.040)	DJ (0.192)	Infoj <sup>b</sup> (0.169)
<i>Sweeney and McFarlin (1997) 2-Factor</i>						
Model prediction	DJ	PJ	PJ	DJ	DJ	DJ
Colquitt <i>et al.</i> BDPJ	DJ (0.18)	PJ (0.11)	PJ (0.09)	Intj <sup>a</sup> (0.02)	DJ (0.16)	DJ <sup>a</sup> (0.06)
This study BDPJ	DJ (0.244)	PJ (0.186)	PJ (0.214)	Intj (0.043)	DJ <sup>a</sup> (0.158)	Infoj <sup>b</sup> (0.167)
This study PJFP	DJ (0.246)	DJ (0.195)	DJ (0.178)	Intj (0.040)	DJ (0.192)	Infoj <sup>b</sup> (0.169)
<i>Bies and Moag's (1986) Agent-System</i>						
Model prediction	Intj Infoj	PJ	PJ	Intj Infoj	Intj Infoj	Intj Infoj
Colquitt <i>et al.</i> BDPJ	DJ (0.18)	PJ (0.11)	PJ (0.09)	Intj <sup>a</sup> (0.02)	DJ (0.16)	DJ <sup>a</sup> (0.06)
This study BDPJ	DJ (0.244)	PJ (0.186)	PJ (0.214)	Intj (0.043)	DJ <sup>a</sup> (0.158)	Infoj <sup>b</sup> (0.167)
This study PJFP	DJ (0.246)	DJ (0.195)	DJ (0.178)	Intj (0.040)	DJ (0.192)	Infoj <sup>b</sup> (0.169)

Notes: Each cell lists the single most predictive justice dimension along with its contribution to  $R^2$ , even if this contribution could not be established as statistically significantly different from other justice dimensions' contributions. The shaded results are consistent with the predictions of the Organizational Justice model.

The contribution to  $R^2$  value for the Colquitt *et al.* BDPJ line represents the unique variance of that justice dimension, while the other two lines report the relative weight associated with the justice dimension. It is logical that relative weights would be larger than unique effects, given how they are calculated. This difference is explained more fully in the text.

Indicates no differences in explained variance greater than 0.02. As such, cautious interpretation is recommended.

Indicates all four justice dimensions explain relatively equal amounts of variance.

DJ, Distributive justice; PJ, Procedural justice; Intj, Interpersonal justice; and Infoj, Information justice.

operationalization are most consistent with the distributive dominance model, whereas the results using BDPJ are most consistent with the two-factor model. The results for organizational citizenship behaviors and supervisor evaluation are exceptions to this. As predicted by the agent-system model, interactional justice is seen as most important in predicting organizational citizenship behaviors. Thus, there is some support for all three classic organizational justice models, although none were fully supported.

In summary, there are two major results of this study. First, there are very few substantive differences between the findings of Colquitt *et al.* (2001) study and the current study when BDPJ is used as the procedural justice operationalization. In this case, methodological issues seem not to be a major issue in creating divergent results and/or misleading interpretations. The results are robust regardless of whether RWA or regression-based analyses are conducted. Second, substantive differences are found when different procedural justice

operationalizations are used. Specifically, distributive justice is more important in explaining variance in job satisfaction, organizational commitment, and withdrawal when the PJFP operationalization is used instead of BDPJ. As PJFP seems to be the more appropriate choice, this finding does have conceptual and practical implications, which are discussed more fully in the discussion.

Finally, Appendix B is presented in response to Johnson's (2004) observation that no study has yet been conducted that compares the results of an RWA using meta-analytic data that was both corrected and left uncorrected for attenuation due to unreliability. The data set used in this study provides this opportunity, but is extraneous to the main focus of the paper, and thus provided in an appendix for interested readers. One can compare Table 1 and Appendix B and observe that, in general, there are only small differences in the pattern of results. These small differences are likely due to some measures being more reliable than others, although this is hard to assess more fully



because Colquitt *et al.* (2001) do not report average reliability coefficients.

### Discussion

This study reexamined organizational justice research in two important ways. First, it reevaluated research that has tended to use regression-based methods with a more appropriate analytic method, RWA. Second, it examined the implications of using different operationalizations of procedural justice.

Given the noted limitations of regression-based methods (Nunnally and Bernstein, 1994), the use of RWA (Johnson, 2000), a more recently developed technique more appropriate for questions of the relative weight and marginal utility of various dimensions of justice, was warranted. As it turns out, there were few, if any, substantive differences in the patterns of results based on the methods being used. This non-finding is important, as it is another indicator of the robustness of the dimensionality of organizational justice and the validity of past research in this area.

As stated earlier, multiple regression maximizes the prediction of a dependent variable using a set of data, but is not as useful in determining the differential effects of each of the included independent variables. RWA accounts for both unique and shared variance among predictors and seems well suited to behavioral sciences research in general, and justice research in particular. LeBreton *et al.* (2007) provide two instructive examples of how the interpretation of a study's results could be quite different when applying RWA as compared with regression. Further, Johnson and LeBreton (2004) provide easy-to-follow guidance on how to conduct RWA.

One hopes that the more researchers are exposed to this type of analysis, the more they will use it for hypotheses that focus on the relative importance of factors in explaining variance in dependent variables. Clearly, there are many areas of organizational research in which the relative importance of predictors would be extremely interesting (Johnson, 2001). For example, a measure of relative importance would be appropriate if one is comparing the predictive validities of various employment selection tests and criteria, making decisions for reducing the number of items in a scale, or comparing the contributions of various proposed antecedents with phenomena such as employee turnover (see also LeBreton *et al.*, 2007). Applying RWA to the most comprehensive data set in organizational justice is a contribution in itself,

even if, in this case, results using this method served to largely confirm past results using regression-based methods.

The more provocative finding of this study is that the choice of procedural justice operationalization can alter results and the implications drawn from justice research studies. When using the broadest possible operationalization of procedural justice, BDPJ, it is not surprising that it is seen as the primary explanatory factor of many dependent variables. However, when a more limited, and I would argue, more appropriate operationalization is used, procedural justice is seen as less influential, and distributive justice becomes a more important explanatory factor.

As stated earlier in the paper, BDPJ is seen as a suboptimal operationalization, as it combines elements of procedural, interpersonal and informational justice, introduces unnecessary multicollinearity, and is less suitable for use in either regression-based or RWA. As researchers have cautioned against unnecessary overlap in measuring the various dimensions of justice (Colquitt and Shaw, 2005) and have repeatedly confirmed justice as having four unique, yet interrelated dimensions (e.g., Colquitt, 2001; Bies, 2005), the use of cleaner, more precise, and non-overlapping operationalizations of justice dimensions is seen as the more valid choice. Thus, one should utilize operationalizations closer in scope to PJFP, for both methodological (i.e., avoiding unnecessary multicollinearity) and conceptual (i.e., discriminant validity) reasons.

Thus, one conclusion to be drawn from the present study is that the importance of distributive justice may be overlooked, in part, because a very influential meta-analysis may have overstated the importance of procedural justice and understated the importance of distributive justice.

However, the present study is not the first to question whether the relative importance of distributive justice has been undervalued. In fact, some earlier work on organizational justice (e.g., Sweeney and McFarlin, 1997; Cropanzano and Ambrose, 2001), found high levels of intercorrelation between distributive and procedural justice, calling into question the marginal utility of procedural justice in predicting employee reactions. Further, in their review of the literature, Skitka *et al.* (2003) discovered that "current theorists argue that distributive justice has a comparatively limited sphere of importance relative to procedural fairness" (p. 310) before finding in their empirical meta-analysis that the role of distributive justice had



been underestimated by researchers. Similarly, Ambrose and Arnaud (2005) found that justice researchers have been “notably lax in terms of controlling for distributive justice when examining the effects of procedural justice” (p. 74), likely leading to overstated results for the importance of procedural justice.

The current findings are also consistent with Lind’s (2001) fairness heuristic theory, which made an association between perception/confirmation biases (e.g., Jonas *et al.*, 2001) and organizational justice (see also Ambrose and Schminke, 2009). This theory posits that individuals make a judgment to the overall fairness of a decision using the most salient information they have, and then use subsequent information to corroborate their initial judgment. As the outcomes are often more immediately evident than processes, distributive justice may play a large role in shaping this overall judgment. Although the present study did not test process models, its results are consistent with fairness heuristic theory.

The present results are also consistent with Ambrose and Arnaud’s (2005) and Brockner and Wiesenfeld’s (2005) observations that many of the studies focused on the marginal utility of justice dimensions had not properly controlled for distributive justice, thereby possibly overstating the importance of procedural justice. However, the current study, by virtue of using a more appropriate analytic strategy, RWA, and a more appropriate operationalization of procedural justice, PJFP, addressed their concern and more validly accounted for the inter-relations of the various dimensions of justice. As a result, this study found that distributive justice accounts for the largest shares of relative explained variance in a wide range of employee outcomes, lending support to Ambrose and Arnaud’s (2005) and Brockner and Wiesenfeld’s (2005) observations.

Finally, the results of this study may indicate that perhaps we have come full circle, supporting one of the earliest models of organizational justice, Leventhal’s (1980) distributive dominance model, in which employee reactions to organizational decisions are best explained by distributive justice. Reality is more nuanced than this, but the present study does lend evidence that the importance of distributive justice is sometimes overlooked.

While I would never advocate that managers make decisions utilizing anything less than fair process, respectful treatment, and transparent information (see Cropanzano *et al.*, 2007, for an

excellent treatment of practical advice based on organizational justice research), these measures may represent less comfort to those receiving negative outcomes than commonly thought. Thus, one practical implication of this study may be that managers should redouble their efforts to make correct judgments regarding allocation of resources and personnel decisions – because efforts at being procedurally transparent may not be as impactful as commonly thought in shaping employee attitudes, if distributive justice is lacking. Considering the time demands on managers, this research suggests where managers could concentrate their efforts.

The results of this study also suggest future areas for organizational justice research. First, considering the extensive research on justice in the last decade, a newly conducted meta-analysis is warranted. This quantitative review could be useful in comparing its results with the Colquitt *et al.* (2001) study, and also by including moderating variables that may better illustrate the conditions in which different justice dimensions may have differential effects.

Further, future research should build upon some of the most promising new threads of organizational justice research. In particular, several researchers are investigating the potential mediators and moderators of justice perceptions (e.g., Ambrose *et al.*, 2007), the interactive effects of the various dimensions of justice (e.g., Brockner, 2010), and potential process models of justice perceptions (e.g., Hollensbe *et al.*, 2008). Finally, the importance of context (e.g., the fact that procedural justice may be more psychologically important with negative outcomes than with positive ones) should also be further explored and refined.

### Limitations and conclusion

RWA corrects for multicollinearity and avoids many of the biases associated with regression-based techniques. However, it is also possible that there were flaws both in the present study and in the Colquitt *et al.* (2001) meta-analysis from which the data are taken. In particular, we do not have detailed information about how the dimensions of justice were defined, and on what basis measures were included and combined into various categories. For example, it is probable that the muddled results regarding evaluation of supervisor are due to combining the different types of supervisor relationships found between laboratory and field studies. It is less likely that there are major problems with the other criterion measures used



in this study; however, full information was not always included in the meta-analysis. This is important, as Colquitt and Shaw (2005) demonstrated that precision in measuring organizational justice is important but sometimes overlooked. For instance, they maintain it is important to distinguish between measures that assess the fairness of an organizational decision vs a decision made by an identifiable single human actor; failures to do so may impact results.

Another limitation in this study is that there is no easily calculable method for determining statistically significant differences among relative weights (Johnson, 2001; LeBreton *et al.*, 2007). Instead, Johnson (2004) and Tonidandel *et al.* (2009) describe a bootstrapping procedure in which one could create a large population of data sets based on the data set in use, and then calculate confidence intervals around relative weight results. The use of this procedure is beyond the scope of this paper, especially considering that this procedure has never been applied to meta-analytic data, and it has not been established that it is valid to do so. I have attempted to be conservative in interpreting this study's findings and encourage the reader to be similarly conservative so as to avoid overstating small differences in relative weight.

Further, RWA is necessarily restricted to analysis of main effects, and may ignore the importance of interactive effects that have been identified in the organizational justice literature. Finally, the data taken from the Colquitt *et al.* (2001) meta-analysis is nearly a decade old. While the implications of the present study are clear, it is possible that the inclusion of more recent studies could lead to different results. The field seems ripe for an updated meta-analysis.

Despite these limitations, this study represents a meaningful contribution to our understanding of organizational justice. These results provide evidence that results vary depending on how broadly procedural justice is operationalized and measured, and that more precise operationalizations of justice should be used. Further, the importance of distributive justice should not be overlooked, as we increasingly study procedural, interpersonal, and informational justice. Finally, this study also provides a methodological contribution as it is one of only a handful of studies in the organizational literature (see Behson, 2002, 2005, Johnson and LeBreton, 2004, and LeBreton *et al.*, 2007) to revisit prior research using RWA or dominance analysis. Such critical reanalyses of established knowledge are an important but all too infrequently performed part of the scientific process.

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### Appendix A

**Table A1** Correlation matrices used in relative weight analyses – based on Colquitt *et al.* (2001) meta-analytic data, data corrected for attenuation due to unreliability

	1	2	3	4	5		1	2	3	4	5
1. Outcome satisfaction		0.48	0.19	0.3	0.61	1. Organizational citizenship		0.22	0.29	0.26	0.15
2. Procedural justice	0.53		0.69	0.64	0.67	2. Procedural justice	0.25		0.69	0.64	0.67
3. Interpersonal justice	0.19	0.63		0.66	0.42	3. Interpersonal justice	0.29	0.63		0.66	0.42
4. Information justice	0.3	0.58	0.66		0.46	4. Information justice	0.26	0.58	0.66		0.46
5. Distributive justice	0.61	0.57	0.42	0.46		5. Distributive justice	0.15	0.57	0.42	0.46	
1. Job satisfaction		0.62	0.35	0.43	0.56	1. Withdrawal		-0.46	-0.02	-0.24	-0.5
2. Procedural justice	0.4		0.69	0.64	0.67	2. Procedural justice	-0.34		0.69	0.64	0.67
3. Interpersonal justice	0.35	0.63		0.66	0.42	3. Interpersonal justice	-0.02	0.63		0.66	0.42
4. Information justice	0.43	0.58	0.66		0.46	4. Information justice	-0.24	0.58	0.66		0.46
5. Distributive justice	0.56	0.57	0.42	0.46		5. Distributive justice	-0.5	0.57	0.42	0.46	



Table A1 Continued

	1	2	3	4	5		1	2	3	4	5
1. Organizational commitment		0.57	0.19	0.29	0.51	1. Supervisor evaluation		0.64	0.62	0.65	0.59
2. Procedural justice	0.37		0.69	0.64	0.67	2. Procedural justice	0.6		0.69	0.64	0.67
3. Interpersonal justice	0.19	0.63		0.66	0.42	3. Interpersonal justice	0.62	0.63		0.66	0.42
4. Information justice	0.29	0.58	0.66		0.46	4. Information justice	0.65	0.58	0.66		0.46
5. Distributive justice	0.51	0.57	0.42	0.46		5. Distributive justice	0.59	0.57	0.42	0.46	

Note: Data above the diagonal is based on the Broadly Defined Procedural Justice (BDPJ) operationalization of procedural justice. Data below the diagonal is based on the Procedural Justice Fairness perceptions (PJFP) operationalization.

### Appendix B

Table B1 Results of the relative weights analysis, showing the relative contribution to R<sup>2</sup> of the four justice dimensions on employee outcome variables, data from the meta-analytic results of Colquitt *et al.* (2001). Data left uncorrected for attenuation due to unreliability.

	Raw relative weights		Relative weights as percentage of R-square		Raw relative weights		Relative weights as percentage of R-square		Raw relative weights		Relative weights as percentage of R-square	
	BDPJ	PJFP	BDPJ (%)	PJFP (%)	BDPJ	PJFP	BDPJ (%)	PJFP (%)	BDPJ	PJFP	BDPJ (%)	PJFP (%)
	<i>Outcome satisfaction</i>				<i>Job satisfaction</i>				<i>Organizational commitment</i>			
Procedural justice	0.074	0.116	25.0	34.1	0.110	0.037	38.9	15.3	0.151	0.049	50.8	23.6
Interpersonal justice	0.012	0.014	3.9	4.1	0.029	0.033	10.2	13.7	0.019	0.008	6.40	3.90
Information justice	0.026	0.026	8.8	7.6	0.030	0.034	10.5	14.0	0.027	0.029	9.2	13.8
Distributive justice	0.186	0.185	62.3	54.2	0.115	0.138	40.5	56.9	0.100	0.122	33.6	58.7
R <sup>2</sup>	0.298	0.340			0.284	0.240			0.297	0.207		
	<i>Citizenship behaviors</i>				<i>Withdrawal</i>				<i>Supervisor evaluation</i>			
Procedural justice	0.012	0.019	19.1	27.5	0.092	0.045	34.0	19.6	0.100	0.096	19/9	18.9
Interpersonal justice	0.026	0.025	41.7	37.1	0.036	0.025	13.2	10.7	0.131	0.132	26.1	26.2
Information justice	0.020	0.019	31.3	28.2	0.026	0.029	9.6	11.7	0.144	0.146	28.6	28.8
Distributive justice	0.005	0.005	7.9	7.2	0.117	0.134	43.3	57.9	0.127	0.132	25.4	26.1
R <sup>2</sup>	0.063	0.068			0.270	0.231			0.502	0.506		

Note: The first number in each cell is based on the Broadly Defined Procedural Justice (BDPJ) operationalization of procedural justice and the second is based on the Procedural Justice Fairness Perceptions (PJFP) operationalization.

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