RESEARCH REPORT

Trickle-Down Effects of Supervisor Perceptions of Interactional Justice: A Moderated Mediation Approach

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Supervisors' perceptions of how fairly they are treated by their own supervisors can influence their subordinates' perceptions, attitudes, and behavior. We present a moderated mediation model that demonstrates how work group structure can enhance or constrain these effects. Results show supervisors' perceptions of the fairness of the interactional treatment they receive relate to their subordinates' perceptions of interactional justice climate, and this relationship is stronger in work groups with more organic structures. Furthermore, consistent with the moderated mediation prediction, interactional justice climate mediates the relationship between supervisors' perceptions of interactional justice and outcomes when work group structures are more organic. We discuss the implications of the findings for research on justice and trickle-down effects.

Keywords: justice climate, work group structure, interactional justice, deviance, OCB

The dominant paradigm in organizational justice research involves assessing employees' justice perceptions and linking these perceptions to a variety of attitudinal and behavioral outcomes. Research demonstrates organizational justice perceptions are positively related to a broad range of outcomes, including job satisfaction, organizational commitment, evaluations of authority, trust, organizational citizenship behavior (OCB), and performance (Cohen-Charash & Spector, 2001; Colquitt, Conlon, Wesson, Porter, & Ng, 2001). Recently, researchers have begun exploring the effects of *supervisors'* perceptions of how fairly they are treated, and how the treatment they have experienced is related to their subordinates' perceptions, attitudes, and behaviors. Such research is important because supervisors play a central role in employees' work life and can significantly influence their subordinates' attitudes and behavior (Kozlowski & Doherty, 1989). Therefore, for a complete understanding of justice in organizations, it is important to examine fair treatment across multiple organizational levels.

A number of researchers have recognized that how supervisors are treated is related to the perceptions, attitudes, and behavior of their subordinates. This research focuses on "trickle-down" models—the effect of perceptions of one member of the organization (typically the supervisor) on other members (typically the supervisor's subordinates). The trickle-down effect is an emerging perspective that has received considerable empirical support.

Research has identified individual characteristics that limit or enhance the trickle-down effect (e.g., Aryee, Chen, Sun, & Debrah, 2007; Tepper & Taylor, 2003). However, to date no research considers the influence of contextual factors that may influence the effect. Yet, the trickle-down effect occurs within a broader organizational environment, and this context plays an important role in organizational behavior (Johns, 2006). In this study, we examine how one contextual variable—work group structure—may influence the relationship between supervisors' experiences and subordinates' reactions. We suggest structure moderates the relationship between supervisors' perceptions of their interactional justice experiences and subordinates' perceptions of justice climate and, in turn, subordinate behavior.

We make a number of contributions to the organizational justice and trickle-down literatures. First, most justice research focuses on the effects of employees' justice perceptions; we explicitly examine the effects of justice perceptions for individuals in supervisory roles. This is important because it investigates the influence of justice at multiple levels in the organizational hierarchy. Second, we extend prior trickle-down models by examining the influence of context on the effect. This research examines *when* supervisors' treatment is likely to trickle-down to subordinates. Third, prior research has examined the trickle-down effects on individual-level employee perceptions, attitudes, and behaviors. We suggest trickle-down effects have a broader influence. We examine how supervisors' perceptions of their own personal fairness experiences affect the work group climate, and how the climate relates to group OCB and group deviance.

Trickle-Down Effects

The premise of trickle-down models is that the experience of one individual in an organization affects his or her perceptions of the organization as well as his or her behavior toward other individuals. For example, individuals who feel fairly treated by their organization are more likely to engage in positive behavior, including fair behavior directed at others. Those other individuals will then perceive they are more fairly treated, which ultimately translates into additional positive behavior. Thus, the experiences one individual has with the organization and its representatives "trickles down" to affect other individuals.

Masterson (2001) was the first to demonstrate trickle-down effects in the justice literature. Masterson demonstrated employee perceptions of procedural and distributive fairness were related to (i.e., trickled-down to) customer reactions through their influence on employee commitment and customers' perceptions of fairness. More recent research has focused on the effect of supervisors' experiences on their subordinates. For example, Tepper and Taylor (2003) found supervisors' perceptions of procedural justice affected subordinates' perceptions of procedural justice and subordinates' OCB. Shanock and Eisenberger (2006) found supervisors' perceived organizational support (POS) was related to subordinates' perceived supervisor support, which was related to subordinates' POS as well as inrole and extrarole performance. Simons, Friedman, Liu, and Parks (2007) reported a trickle-down effect for behavioral integrity. Bordia, Restubog, Bordia, and Tang (2010) found supervisors' perceptions of organizational psychological contract breach trickled down to affect subordinates' perceptions of contract breach and subordinates' customer-directed citizenship behavior.

Most trickle-down research examines the effect of supervisors' perceptions on subordinates' perceptions of the same construct. However, trickle-down effects have been found across different constructs as well. Tepper, Duffy, Henle, and Lambert (2006) found supervisors' perceptions of procedural justice were associated with subordinates' perceptions of abusive supervision. Erdogan and Enders (2007) found supervisors' perceptions of POS interacted with the quality of leader–member exchange to influence subordinates' job satisfaction and performance. Aryee et al. (2007) found supervisors' interactional justice perceptions trickled down via abusive supervision to influence subordinates' organizational commitment and OCB.

Although recent research has moved beyond an examination of parallel supervisor and subordinate constructs, all trickle-down research to date shares a common focus on individual-level perceptions and behavior. That is, trickle-down models examine how supervisors' experiences affect subordinates' individual-level perceptions, attitudes, or behavior. However, we believe supervisory trickle-down effects are broader than current research demonstrates; supervisors' perceptions also exert work group-level influence. Specifically, we expect supervisors' perceptions of fairness to be associated with their work groups' justice climate.

In this study, our focus is on supervisors' perceptions of their own interactional justice experiences. We focus on interactional justice for three reasons. First, interactional justice is under the actor's control to a greater extent than other forms of justice (Greenberg, 2006; Judge & Colquitt, 2004; Scott, Colquitt, & Paddock, 2009). Actors can choose to be interpersonally sensitive and provide explanations more easily than they can change procedures or distributions. As interactionally fair behavior is more easily controlled by the individual, it is particularly likely to trickle-down within an organization. Second, interactional justice is most likely to be delivered by supervisors (Malatesta & Byrne, 1997; Masterson, Lewis, Goldman, & Taylor, 2000; Rupp & Cropanzano, 2002), which makes it the type of justice most relevant for supervisor-related effects. Third, interactional justice has been shown to be a powerful predictor of both positive and negative outcomes (Cohen-Charash & Spector, 2001; Colquitt et al., 2001), but has received little attention at the climate level (Whitman, Carpenter, Horner, & Bernerth, 2012).

Supervisors and Work Group Climate

Organizational climates reflect shared perceptions of the policies, practices, and procedures that an organization rewards, supports, and expects (Schneider & Reichers, 1983). Climate guides employee behavior by providing cues about the link between behavior and outcomes (Schneider, 1975). Most contemporary research on organizational climate examines climate at the work group level (Kuenzi & Schminke, 2009), and research in a number of areas has considered the relationship between supervisors' behavior and work group climate. Indeed, some of the earliest work on leadership demonstrated the influence of leader behaviors on climate perceptions (Lewin, Lippitt, & White, 1939). More recent research demonstrates similar effects for a broad range of work group climates, for example, service climate (Schneider & Bowen, 1985), safety climate (Zohar & Luria, 2004; Zohar & Tenne-Gazit, 2008), creativity climate (Isaksen, 2007; Shalley & Gilson, 2004), sexual harassment climate (Offermann & Malamut, 2002), justice climate (Ehrhart, 2004; Mayer, Nishii, Schneider, & Goldstein, 2007; Walumbwa, Hartnell, & Oke, 2010), and ethical climate (Mulki, Jaramillo, & Locander, 2009).

The research on the relationship between supervisors and work group climate draws on supervisors' role as representatives of the organization and enactors of organizational policies. Supervisors demonstrate what behaviors are appropriate. They provide information about what behaviors will be rewarded and punished as well as what is prioritized, valued, and supported (Clarke & Ward, 2006; Dragoni, 2005; Zohar, 2002; Zohar & Tenne-Gazit, 2008). Kozlowski and Doherty (1989) suggest, "the nature and quality of interactions with supervisors may be a key filter in the interpretations that provide the basis for subordinates' climate perceptions" (p. 547). Naumann and Bennett (2000) also highlight the role of the supervisor in the development of work group climate, referring to supervisors as "climate engineers" (p. 883).

Social learning theory (SLT; Bandura, 1977, 1986) provides a foundation for understanding why supervisors' perceptions of interactional justice (i.e., how interactionally fairly they are treated by their own supervisors) are likely to be associated with their

work groups' interactional justice climate.[1] First, SLT posits that individuals learn norms for appropriate behavior by witnessing and then striving to emulate the behaviors of credible and legitimate models (Bandura, 1977, 1986). Given their status in organizations, leaders often serve as role models for determining acceptable and appropriate behavior. Thus, a supervisor is likely to look to his or her manager to learn the appropriate way to interact with others. If a supervisor's manager treats him or her with dignity and provides adequate justifications for decisions, such positive interpersonal treatment is expected to be replicated when interacting with his or her own subordinates. In contrast, when a supervisor's manager is disrespectful and does not provide adequate and truthful information, the supervisor is likely to demonstrate similar negative interpersonal behavior toward his or her subordinates.

However, as described above, when supervisors model the behavior of their managers, that behavior has an impact beyond subordinates' individual experiences; it influences work group climate as well. Interactionally fair or unfair behavior modeled by a supervisor provides cues for interactional justice climate. Individuals come to understand what is expected of them and how to behave not only through direct experience but also by observing others (Bandura, 1977). Mayer et al. (2007) note supervisors are the "source of behavioral data on which employees base their views of organizational objectives and policies" (p. 931). The understanding of what is expected and valued that stems from observing a supervisor's behavior is a basis for work group climate. Thus, we expect the trickle-down effect of supervisors' interactional justice perceptions, and the behavior that results from them, establishes the foundation for the group's perceptions of interactional justice climate. We predict:

Hypothesis 1: Supervisors' perceptions of their own interactional justice experiences will be positively related to the interactional justice climate of the work group they supervise.

The Moderating Role of Work Group Structure

Previous trickle-down research demonstrates that the relationship between supervisors' perceptions and subordinates' responses is sometimes contingent on other factors. Tepper and Taylor (2003) examined the moderating effect of role definition and found the trickle-down effect is stronger when supervisors perceive mentoring as an extrarole behavior. Simons et al. (2007) found the trickle-down effect of perceived behavioral integrity is stronger for Black employees than for non-Blacks. Erdogan and Enders (2007) found supervisors' POS affects subordinates' satisfaction and performance differently for high and low leader–member exchange leaders. Finally, Aryee et al. (2007) concluded that trickle-down abuse "is contingent on the actor's personality" (p. 199).

A common theme among these previous studies is each focuses on *individual* characteristics that moderate trickle-down effects. However, the behavior of supervisors and subordinates occurs in a broader organizational context. Yet, no research has examined contextual factors that may enhance or inhibit the trickle-down influence. Because of the broad impact that organizational characteristics may exert (compared with the relatively limited influence of any single supervisor), we suggest the organizational context itself represents a potentially important moderator of the trickle-down effect. In particular, we suggest work group structure plays an important role in trickle-down processes.

Structure in Organizations

Structure has been called one of the most ubiquitous aspects of organizations (Clegg & Hardy, 1996) and therefore provides a natural choice to consider in exploring contextual moderating influences on trickle-down effects. Scholars have distinguished between two types of structures: mechanistic and organic (Burns & Stalker, 1961; Khandwalla, 1976/1977; Lawrence & Lorsch, 1967). Mechanistic structures are characterized as rigid, tight, and bureaucratic. Conversely, organic structures are characterized as flexible, loose, and decentralized. Unlike other conceptualizations of structure, the organic–mechanistic distinction is isomorphic across organization levels (Donaldson, 2001). Because our interest in this research is on work group-level phenomena (i.e., trickle-down effects within a work unit), we follow the lead of recent research that focuses on the work group-level manifestations of organic and mechanistic structure (Ambrose & Schminke, 2003; Birkinshaw, Nobel, & Ridderstrale, 2002; DeGroot & Brownlee, 2006; Dimotakis, Davison, & Hollenbeck, 2012).[2]

Research demonstrates structure influences a variety of individual- and group-level outcomes. Organic structures have been associated with increased job satisfaction (Meadows, 1980b), team innovation (Meadows, 1980a), organization-based self-esteem (Pierce, Gardner, Cummings, & Dunham, 1989), learning (Slevin & Covin, 1997), and perceptions of interactional justice (Schminke, Ambrose, & Cropanzano, 2000; Schminke, Cropanzano, & Rupp, 2002). Turban and Keon (1993) found structure moderated the relationship between individuals' personality characteristics and job choice. Ambrose and Schminke (2003) found structure moderated the relationship between justice perceptions and employee attitudes.

We suggest work group structure will moderate the relationship between supervisors' perceptions of their own interactional justice experiences and the interactional justice climate of their work group. We expect the relationship between supervisors' perceptions of interactional justice and interactional justice climate will

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[1] We focus on social learning theory as the mechanism underlying the relationship between supervisors' interactional justice, interactional justice climate, and employee behavior. Theory and research on displaced aggression (Dollard, Miller, Doob, Mowrer, & Sears, 1939) also provides an explanation for the transmittal of negative behavior. Indeed, it is likely that both modeling and displaced aggression occur for negative behavior. We expect the supervisors' influence on work group climate to be the same whether the negative behavior stems from role modeling or displaced aggression.

[2] Organization theories identify three approaches to thinking about structure. The organic–mechanistic distinction we use is derived from the structural contingency theory perspective. This perspective arose from research on the role of structure in work group performance (e.g., Leavitt, 1951). Theorists raised these ideas to the organization level exploring the relationship between overall structure and performance (e.g., Woodward, 1958). However, recognizing the diversity of work units within organizations, theorists began examining structural differences across departments (e.g., Lawrence & Lorsch, 1967). Donaldson (2001) concluded that although the specific manifestations of structure may vary by organization level, the concept of organic/mechanistic structures generalizes across levels. In contrast to the organic–mechanistic distinction, the two other research streams—structure's relationship to size (associated with Weber's, 1947, discussion of bureaucracy) and structure's relationship to strategy (which focuses on questions such as the choice of divisional or functional forms of organization)—do no easily translate to the work group.

be stronger when structure is more organic than when structure is more mechanistic. We base this expectation on three aspects of organic structures. First, work group structure influences situational strength. Mechanistic structures are strong situations, organic structures are weaker situations. Second, appropriate behavior is more ambiguous in organic structures. This increased ambiguity makes supervisors' behavior more salient and influential. Third, organic structures, with their reliance on face-to-face communication, provide more opportunity for interaction between supervisors and subordinates as well as between work group members. Consistent with our expectation, Zohar and Luria (2005) found formalization (one aspect of mechanistic structure) limits the effect of the supervisor on the work group climate. Formalization was associated with less variance across work groups for safety climates. Thus, we predict:

> *Hypothesis 2:* The relationship between supervisors' perceptions of their own interactional justice experiences and interactional justice climate will be moderated by work group structure such that the relationship will be stronger when the work group's structure is more organic.

Interactional Justice Climate and Group-Level Outcomes

Recent research on justice climate demonstrates it has an important influence on employee attitudes and behavior. Most of this research demonstrates justice climate is associated with individuals' attitudes and behavior such as satisfaction, commitment, and helping (Liao & Rupp, 2005; Mayer et al., 2007; Mossholder, Bennett, & Martin, 1998; Naumann & Bennett, 2000; Walumbwa et al., 2010). However, justice climate has also been associated with group-level behavior such as team performance, team absenteeism, unit-level organizational commitment, turnover intentions, and customer service (Colquitt, Noe, & Jackson, 2002; Simons & Roberson, 2003; for a review, see Whitman et al., 2012). We examine the relationship between justice climate and both positive and negative group-level behavior. Specifically, we examine group-level OCB and group-level deviance.

Research linking justice climate and OCB has focused primarily on individual-level OCB. However, some research suggests justice climate should be related to group-level OCB as well. In their theoretical work on justice in teams, Roberson and Colquitt (2005) drew on social exchange theory to suggest justice climate should be associated with group-level OCB. They suggest fair treatment encourages positive exchange relationships within the group. Group members respond to these positive exchanges with positive behaviors, such as OCB directed at the group. Empirically, Naumann and Bennett (2002) demonstrated a significant relationship between procedural justice climate and group-level helping behavior. Similarly, Ehrhart (2004) found procedural justice climate predicted unit-level OCB. Thus, we expect an interactionally fair climate to be positively related to group-level OCB.

We know of no research that examines the relationship between justice climate and deviant employee behavior. However, social exchange theory (Blau, 1964; Gouldner, 1960)—and the negative norm of reciprocity—serve as a foundation for the link between interactional justice climate and group-level deviance. Gouldner defines the negative norm of reciprocity as the norm of retaliation,

where individuals seek to get even with or harm the exchange partner who has treated them poorly. Consistent with this principle, research demonstrates individual-level perceptions of injustice are positively related to employee deviance (Ambrose, Seabright, & Schminke, 2002; Colquitt, Scott, Judge, & Shaw, 2006; Greenberg, 1990, 1993; Mount, Ilies, & Johnson, 2006; Skarlicki & Folger, 1997). As with group-level positive behaviors, we expect justice climate to be related to group-level negative behaviors because employees will reciprocate unfair behavior by acting in ways that are harmful to others and the organization. Fair treatment—embodied in an interactionally fair climate—should discourage negative exchanges within the group, decreasing group-level deviance. Specifically, we predict:

> *Hypothesis 3:* Interactional justice climate will be positively related to group OCB and negatively related to group deviance.

Hypotheses 1 and 2 suggest the impact of supervisors' interactional justice perceptions on interactional justice climate will be moderated by work group structure. Hypothesis 3 predicts interactional justice climate will be related to group outcomes. These relationships are reflected in our overall theoretical model, illustrated in Figure 1.

Researchers identify models of this configuration as moderated mediation models (James & Brett, 1984; Preacher, Rucker, & Hayes, 2007).[3] Although Hypotheses 1–3 may be examined by testing the significance of individual paths in the model, research indicates testing individual paths is insufficient for establishing mediation and moderated mediation effects (Edwards & Lambert, 2007; Preacher et al., 2007). Therefore, we provide a final hypothesis, which specifies the overall moderated mediation effects predicted by our model:

> *Hypothesis 4:* Supervisor perceptions of interactional justice will be related to group outcomes via conditional indirect effects, such that its relationship with outcomes will be moderated by work group structure and mediated by justice climate.

Method

Participants and Procedure

We used a snowball sampling procedure to survey 534 participants from 89 work units across 78 different organizations in the southeast United States, including technology, government, insurance, financial, food service, retail, manufacturing, and medical organizations. Students identified both participating organizations and a contact person working full time within each organization. Survey packets were delivered to each contact person who in turn

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[3] Some authors (Baron & Kenny, 1986; Muller, Judd, & Yzerbyt, 2005) have termed this configuration of conditional indirect effects, in which the moderation effect occurs prior to the mediator, mediated moderation rather than moderated mediation. However, because we test the model using the process outlined by Preacher et al. (2007), we adopt their label of *moderated mediation* for describing this type of conditional indirect effect. This label is consistent with that of James and Brett (1984) and Edwards and Lambert (2007).
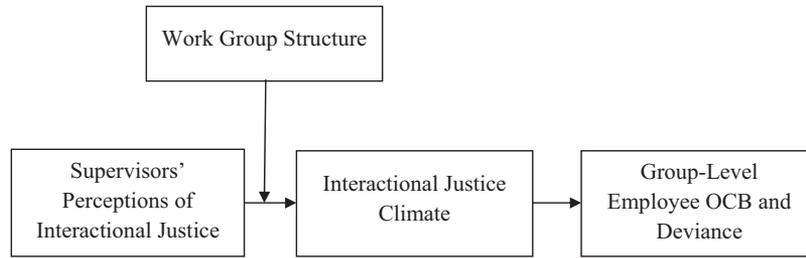
Figure 1. Theoretical model. OCB = organizational citizenship behavior.

hand-delivered them to five employees in the same work unit and that unit's supervisor. Respondents were thanked for their participation and assured confidentiality of their responses. We included a postage-paid envelope in the packet to return the survey directly back to the researchers, ensuring no organizational representative would have access to any responses.

We received a total of 417 responses out of 445 employee surveys distributed (93.7%) and 87 supervisory responses out of 89 surveys (97.8%). Previous research suggests that three responses is a sufficient number to aggregate measures to the group level (Colquitt et al., 2002; Schneider, White, & Paul, 1998; Tracey & Tews, 2005). Six work units did not have both a supervisor and at least three employees and were eliminated from the sample. Thus, our final sample consisted of 489 participants (406 employees and 83 supervisors) from 83 departments across 72 organizations. The employee respondents were 56% male and averaged 29.5 years of age, with 2.9 years of experience in the organization and 2.4 years in the department. Supervisory respondents were 40% male and averaged 32.3 years of age, with 5.8 years of experience in the organization and 4.9 years in the department.

Measures

In addition to demographics, supervisors provided assessments of the following:

Interactional justice. We assessed supervisory perceptions of their own interactional justice experiences with Colquitt's (2001) nine-item measure ($\alpha = .95$). Supervisors' reported the treatment they received from their immediate supervisor by using a 7-point scale (1 = *to a small extent*, 7 = *to a great extent*).

Group OCB.[4] Group OCB was assessed by supervisors using the six-item ($\alpha = .72$) OCBO scale (Williams & Anderson, 1991). Supervisors rated the frequency with which their subordinates engaged in each behavior on a 7-point scale (1 = *never*, 7 = *always*).

Group deviance. We measured the deviant behavior of the group using Bennett and Robinson's (2000) measure that includes seven interpersonal deviance items ($\alpha = .91$) and 12 organizational deviance items ($\alpha = .92$). Supervisors rated the extent to which their subordinates engaged in various deviant behaviors within the past year using a 7-point response format (1 = *never*, 2 = *once*, 3 = *a few times*, 4 = *several times*, 5 = *monthly*, 6 = *weekly*, 7 = *daily*).

In addition to demographics, subordinates provided assessments of the following:

Interactional justice climate. We used a referent shift approach to assess interactional justice climate (Colquitt et al., 2001;

Roberson & Colquitt, 2005). We adapted Colquitt's (2001) interactional justice measure such that employees assessed the behavior of their immediate supervisor toward employees in the department in general, rather than their personal experiences ($\alpha = .96$).

Work group structure. Following Covin and Slevin (1989) and Slevin and Covin (1997), we used Khandwalla's (1976/1977) seven-item scale ($\alpha = .96$), which measures the degree to which departments reflected mechanistic or organic characteristics. Employees indicated along a 7-point scale the degree to which paired statements described the structure of their work group. Items were scored such that higher values represented a more organic structure.

Aggregation Analysis

Prior to aggregating individual assessments of interactional justice climate and work group structure into department-level variables, we assessed whether sufficient agreement existed among department members to justify aggregation (James, 1982; Kozlowski & Klein, 2000). We calculated r_{wg} and intraclass correlation (ICC) statistics for each. We found mean r_{wg} values of .74 for justice climate and .76 for structure, suggesting aggregation is appropriate for each (George, 1990; George & James, 1993). ICC(1) scores were .25 and .21, and ICC(2) scores were .67 and .75 for interactional justice climate and structure. Each exceeds the recommended cutoff points for justifying aggregation (Bliese, 2000; Glick, 1985; LeBreton & Senter, 2008).

Results

Descriptive Statistics

Means, standard deviations, reliabilities, and intercorrelations among the variables are presented in Table 1. All variables were mean centered prior to analyses (Aiken & West, 1991).

Hypothesis Testing

Hypotheses 1–3 identify a set of relationships that constitute a moderated mediation model, which is formalized in Hypothesis 4. We follow the procedure outlined by Preacher et al. (2007) for

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[4] One might wonder whether supervisor ratings of group-level behavior might simply reflect supervisors' self-evaluations. Previous research using both employee ratings of group behavior and supervisor ratings of group behavior demonstrates significant correlation between the two and a consistent pattern of results for each type of rating (Ehrhart, 2004; Mayer, Kuenzi, Greenbaum, Bardes, & Salvador, 2009). Furthermore, supervisor ratings demonstrated substantial variation, indicating supervisors do not routinely describe their work groups in only favorable terms.

Table 1
Descriptive Statistics and Correlations

Variable	*M*	*SD*	1	2	3	4	5	6
1. Supervisor interactional justice	5.44	1.35	(.95)					
2. Work group structure	3.99	0.69	.14**	(.96)				
3. Interactional justice climate	5.28	0.90	.08	.01	(.96)			
4. Group OCB	4.24	0.56	.44**	.14**	.22**	(.72)		
5. Group interpersonal deviance	2.47	1.19	−.09	.03	−.22**	−.33**	(.91)	
6. Group organizational deviance	2.72	1.51	−.09	.04	−.21**	−.27**	.77**	(.92)

Note. $N = 83$ work units (406 employees, 83 supervisors). Reliabilities (coefficient alpha) appear in parentheses on the diagonal. OCB = organizational citizenship behavior.
** $p < .01$.

examining such models. Specifically, we use the SPSS macro (MODMED) developed by Preacher et al. (2007). As all hypotheses were directional and theory driven, we used one-tailed tests (Jones, 1952, 1954; Kimmel, 1957).

Hypothesis 1 and Hypothesis 2: The mediator model. The MODMED procedure provides results in multiple steps. The first step, the mediator variable model (top of Table 2), examines the impact of the independent variable (supervisor perception of his or her own interactional justice experiences), the moderator variable (work group structure), and their interaction on the mediator vari-

able (interactional justice climate). This step provides tests of Hypotheses 1 and 2.

The results reveal a significant main effect of supervisors' perceptions of their own interactional justice experiences on interactional justice climate, supporting Hypothesis 1. The results also reveal a significant interaction between supervisors' perceptions of interactional justice and work group structure, supporting Hypothesis 2. This interaction is shown in Figure 2. As predicted, the relationship between supervisors' perceptions of interactional justice and interactional justice climate is stron-

Table 2
Regression Results for Estimated Coefficients of the Moderated Mediation Model

Predictor	*B*	(*SE*)	Effect size (Cohen's f^2)
	Mediator variable model: Interactional justice climate		
Constant	−.05	(.05)	
Supervisor interactional justice	.07*	(.04)	
Work group structure	.04	(.07)	
Supervisor Interactional Justice × Structure	.10*	(.05)	.05
Model R^2 (ΔR^2 − interaction term)	.13*	(.04)*	
	Dependent variable model: Group OCB		
Constant	4.26**	(.03)	
Interactional justice climate	.12**	(.03)	
Supervisor interactional justice	.15**	(.02)	
Work group structure	.08*	(.04)	
Supervisor Interactional Justice × Structure	−.11**	(.03)	.27
Model R^2 (ΔR^2 − interaction term)	.25**	(.03)*	
	Dependent variable model: Group interpersonal deviance		
Constant	2.48**	(.05)	
Interactional justice climate	−.26**	(.07)	
Supervisor interactional justice	−.08*	(.05)	
Work group structure	.11	(.09)	
Supervisor Interactional Justice × Structure	−.05	(.07)	.06
Model R^2 (ΔR^2 − interaction term)	.25**	(*ns*)	
	Dependent variable model: Group organizational deviance		
Constant	2.73**	(.08)	
Interactional justice climate	−.33**	(.08)	
Supervisor interactional justice	−.10*	(.06)	
Work group structure	.16	(.12)	
Supervisor Interactional Justice × Structure	−.04	(.09)	.01
Model R^2 (ΔR^2 − interaction term)	.25**	(*ns*)	

Note. All tests are one-tailed. Cohen (1988) identifies $f^2 = .02$ as small effect, .15 as moderate effect, and .26 as large effect. OCB = organizational citizenship behavior.
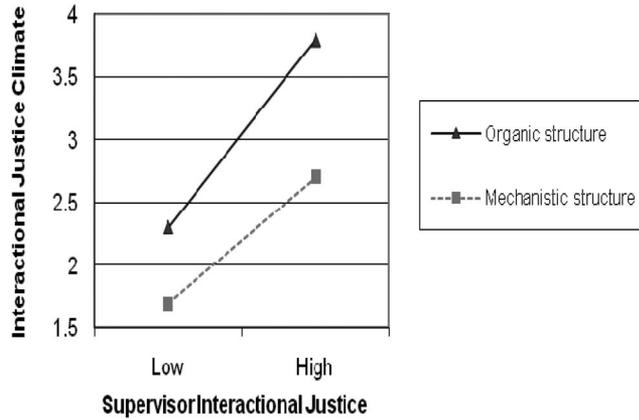* $p < .05$. ** $p < .01$.

Figure 2. Moderating effect of work group structure on the relationship between supervisor interactional justice and employee interactional justice climate. Supervisors' perceptions of their own interactional justice experiences on justice climate at levels of work group structure are one standard deviation above (organic) and below (mechanistic) the mean.

ger in organic structures. Additionally, simple slopes tests demonstrate both slopes are significantly different from zero ($p < .05$).

Hypothesis 3: The dependent variable model. The second step for the MODMED procedure, the dependent variable model (lower part of Table 2), examines the impact of the mediator on the dependent variable, while controlling for the independent variable, the moderator, and their interaction. The dependent variable model allows us to assess Hypothesis 3. Our study examines three group-level outcome variables (OCB, organizational deviance, and interpersonal deviance). Thus, we estimate coefficients for three different dependent variable models. (The mediator model remains the same in each case. Therefore, we report it only once at the top of Table 2.) Results in Table 2 show that the effect of the mediator on the outcome

variable is significant in all three cases, providing support for Hypothesis 3.

Hypothesis 4: Conditional indirect effects (moderated mediation). The third step for the MODMED procedure examines the significance of the conditional indirect effects identified in Hypothesis 4 and depicted in Figure 1. Testing this moderated mediation hypothesis requires testing for the existence of overall conditional indirect effects (Preacher et al., 2007).

Preacher et al. (2007) recommended two methods for assessing the significance of conditional indirect effects. First, researchers may examine the magnitude of the indirect effect (via the mediator) of the independent variable on the dependent variable, at a range of values of the moderator (typically, at the mean and one standard deviation above and below the mean). The significance of these indirect effects may then be addressed using normal theory tests. Second, researchers can use bootstrapping techniques to generate confidence intervals for the magnitude of the indirect effects and assess significance via these confidence intervals.

The results for both methods are shown in Table 3. The normal theory tests indicate that for each of the three outcome variables, the conditional indirect effects are significant at high levels of the moderator (organic structure) and not significant at the mean of the moderator or at low levels of the moderator (mechanistic structure). These results indicate the conditional (moderating) effects demonstrated in our test of Hypothesis 2 exert a significant indirect (mediated) effect on outcomes at more organic levels of work group structure.

The final two columns in Table 3 report 95% confidence intervals for the conditional indirect effects on each outcome variable, generated from bootstrapped data produced by the MODMED procedure. For all three outcome variables, confidence interval values of the indirect effects at one standard deviation above the mean of the moderator (structure) do not include zero. Thus, these results provide additional evidence that significant conditional indirect effects exist for work groups with more organic structures. In all, both the normal

Table 3

Bootstrapping Results for Test of Conditional Indirect Effects at Specific Values of the Moderator (Work Group Structure): Mean and ±1 Standard Deviation

Dependent variable	Value of work group structure	Conditional indirect effect	SE	95% CI Lower	95% CI Upper
Group OCB	−1 SD (3.30)	.000	.006	−.02	.01
	M (3.99)	.009	.005	.00	.02
	+1 SD (4.68)	.017*	.009	.01	.04
Group interpersonal deviance	−1 SD (3.30)	.000	.016	−.03	.03
	M (3.99)	−.019	.012	−.04	.00
	+1 SD (4.68)	−.039*	.020	−.08	−.01
Group organizational deviance	−1 SD (3.30)	.000	.020	−.03	.05
	M (3.99)	−.023	.015	−.06	.00
	+1 SD (4.68)	−.047*	.025	−.11	−.01

Note. Results are based on 5,000 bootstrap samples. Conditional indirect effect tests are one-tailed. CI = confidence interval; OCB = organizational citizenship behavior.
* $p < .05$.

theory and confidence interval tests provide support for the moderated mediation model presented in Figure 1 and formalized in Hypothesis 4; supervisor justice perceptions, work group structure, and justice climate are linked to outcomes via conditional indirect effects.[5]

Our analyses revealed that work group structure moderates the relationship between supervisor perceptions of their interactional justice experiences and interactional justice climate of the work group they supervise, such that the relationship is stronger in organic settings. Furthermore, they revealed that interactional justice climate was positively related to group OCB and negatively related to both interpersonal and organizational group deviance. Finally, results confirmed the existence of the conditional indirect effects predicted by our moderated mediation model, such that the impact of supervisor justice perceptions on outcomes was mediated by justice climate, for higher (more organic) levels of work group structure.

Discussion

The organizational justice literature traditionally examines the relationships between justice perceptions and an individual's attitudes and behavior. But it is important to examine these reactions within the broader organizational context. Trickle-down models have begun to address this issue. These models suggest trickle-down influences related to justice perceptions create a multiplier effect on attitudes and behavior in organizations, as an individual's fairness perceptions influence how fairly he or she treats others, who are in turn influenced in their fair treatment of still others. These effects warrant further examination and understanding. An important part of understanding this trickle-down process is identifying the factors that facilitate or inhibit the trickle-down effect. Our results demonstrate work group structure is such a factor.

The results support our hypotheses. First, consistent with SLT (Bandura, 1977, 1986), the results demonstrate the trickle-down effect of supervisors' perceptions of their own interactional justice experiences on the interactional justice climate of their work groups. Although we did not test social learning directly, our measure provides for a strong test of the social learning perspective. We used Colquitt's (2001) scale for supervisors' interactional justice and adapted the scale to assess justice climate; for both scales, respondents assess the behavior of their immediate supervisor. This approach allows us to examine how supervisors' assessments of their own supervisors' treatment were related to subordinates' perceptions of how the supervisor treats his or her subordinates as a collective.

Second, consistent with our expectations, work group structure moderated the relationship between supervisors' perceptions of interactional justice and the group's interactional justice climate. Supervisors' perceptions of interactional justice were more strongly related to their work groups' interactional justice climate for work groups with more organic structures. Additionally, our results demonstrate significant conditional indirect effects for supervisors' perceptions of interactional justice on group-level outcomes of OCB and group-level deviance. Previous research demonstrates structure plays an important role in individuals' justice perceptions (Schminke et al., 2000, 2002). The current research similarly highlights the importance of structure in a broader context. Structure influences the relationships between individuals and

the extent to which justice perceptions of one individual (in this case, the supervisor) may trickle-down to the work context (justice climate) and work outcomes (OCB and deviance) of others.

Although our primary interest is the trickle-down effects related to interactional justice climate, our research also has theoretical implications for the climate literature more generally. Theory and research on organizational climate highlight the critical role of leaders in the formation of climates (e.g., Dickson, Smith, Grojean, & Ehrhart, 2001; Isaksen, 2007; Shalley & Gilson, 2004; Zohar, 2002; Zohar & Tenne-Gazit, 2008). However, research on the relationship between leaders and climate has largely ignored the role of contextual factors in the development of climate. The findings from this study suggest both supervisors and work group structure influence the climate that is created.

Our findings also have theoretical implications for the organizational justice literature. As organizational justice is becoming a mature field (Colquitt, Greenberg, & Scott, 2005), scholars are increasingly moving away from examining direct relationships between justice perceptions and outcomes in favor of models that explore the boundary conditions of when justice perceptions are more or less likely to relate to employee outcomes. We extend organizational justice theory by exploring work group structure as a moderator. Furthermore, our moderation findings are consistent with a prominent theory of organizational justice—uncertainty management theory (UMT; Lind & van den Bos, 2002; van den Bos & Lind, 2002—and extend UMT in two ways. First, we identify an important organizational source of uncertainty—work group structure. Consistent with UMT, when employees are more uncertain about the appropriate ways to behave (i.e., when the work group structure is more organic), supervisors' interactional justice perceptions are more strongly related to interactional justice climate. Second, our results broaden the variables influenced by uncertainty. The results suggest uncertainty not only strengthens the relationship between justice and individuals' attitudes and behavior, it also influences the relationship between fair behavior and justice climate.

The current research also has a number of practical implications. First, our results demonstrate that treatment received by those at higher levels in the organization is related to the behaviors of employees at lower levels. Our study's design does not allow us to make causal attributions about the relationship between the treatment received by supervisors and the behavior of their subordinates. However, it points to the importance of understanding the impact of fair treatment at all levels of the organization—supervisors and subordinates alike.

A second implication is that work group structure plays an important role in whether information regarding appropriate conduct is easily spread throughout the organization and when this

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[5] Preacher et al. (2007) encourage further exploration of the conditional indirect effects. They recommend researchers probe the nature of the conditional indirect effects. Using bootstrapping procedures, researchers can identify with more precision the point at which significant conditional indirect effects emerge (see Preacher et al., 2007, for a more complete description of this procedure.) The final step in the MODMED procedure provides this test. The results (see Table 4) indicate that across all three outcomes, the significant conditional indirect effects emerge at levels of structure slightly above its mean.

Table 4
Bootstrapping Results for Test of Conditional Indirect Effects at Specific Values of the Moderator (Work Group Structure)

Dependent variable	Value of work group structure	Conditional indirect effect	SE
Group OCB	2.48	−.010	.012
	2.81	−.006	.010
	3.14	−.002	.008
	3.47	.002	.006
	3.79	.006	.005
	4.12	.010	.006
	4.45	.014*	.007
	4.78	.018*	.010
	5.11	.022*	.012
	5.43	.026*	.015
	5.76	.030*	.017
Group interpersonal deviance	2.48	.023	.029
	2.81	.014	.023
	3.14	.005	.018
	3.47	−.004	.014
	3.79	−.016	.015
	4.12	−.013	.012
	4.45	−.022*	.012
	4.78	−.031*	.016
	5.11	−.040*	.021
	5.43	−.058*	.032
	5.76	−.067*	.038
Group organizational deviance	2.48	.029	.036
	2.81	.018	.029
	3.14	.006	.023
	3.47	−.005	.017
	3.79	−.016	.015
	4.12	−.027*	.016
	4.45	−.038*	.020
	4.78	−.049*	.027
	5.11	−.061*	.033
	5.43	−.071*	.041
	5.76	−.083*	.048

Note. Results are based on 5,000 bootstrap samples. All tests are one-tailed. OCB = organizational citizenship behavior.
* $p < .05$.

information becomes the foundation for work group climate. Organizations often respond to increasing market uncertainty and technological change by adopting more organic structures across a wider array of work units. Whereas mechanistic structures provide strict guidelines for proper conduct, organic structures are looser and contain more behavioral leeway and more ambiguity in terms of how to behave. If policies and procedures do not clearly articulate how employees should behave (i.e., a mechanistic structure), it is particularly important for managers at all levels to model appropriate behaviors.

Finally, consistent with previous research on justice, the current research highlights the importance of creating an environment in a work group in which employees collectively feel respected and have access to relevant information. Given the prominent role of supervisors in creating such an environment, it is important that supervisors treat group members with dignity and provide them with relevant information in a truthful manner.

Of course, there are some limitations of the current research. First, although we collected data from different sources (both supervisors and subordinates), the data are cross-sectional. Thus, we cannot make statements about causality. This limitation is especially germane in examining trickle-down effects, which by their very nature unfold over time and across organizational levels. Our results are consistent with the causal processes outlined in the introduction and hypothesis development sections. But determining whether the processes enumerated there represent the actual causal paths by which supervisors' justice experiences translate to employee behavior will require additional research using a longitudinal design. Such research will be challenging, especially if it is to confirm the mediation processes (e.g., changes in justice climate) that provide a conduit for translating supervisor justice judgments into employee behavior. Fully exploring mediating models like ours will require multistage longitudinal studies. And because contextual features of organizations like work climate are often slow to change, such studies will necessarily span considerable time frames.

Second, whereas the results for the relationship between supervisors' interactional justice perceptions and interactional justice climate are consistent with SLT, we did not directly measure modeling processes. Nor did we directly measure the specific processes by which we believe structure affects this relationship. These are important next steps, and it will be useful to examine explicitly the processes through which trickle-down effects emerge. Assessments of whether employees perceive greater or lesser behavioral freedom, greater or lesser interaction between supervisors and subordinates, and so on will be necessary to probe fully the hypothesized links between supervisor treatment and employee behaviors.

Third, we only assessed interactional justice. Future research could examine the effect of other justice dimensions, overall justice, or consider a multifoci perspective. The generalizability of the influence of structure on these other justice constructs warrants investigation. Consider procedural justice, for which the source of justice is typically the organization. Previous research demonstrates the trickle-down effect of supervisors' perceptions of procedural justice on subordinates' perceptions of procedural justice (Tepper & Taylor, 2003). However, research also demonstrates procedural justice is particularly important in work groups with mechanistic structures (Ambrose & Schminke, 2003). It would be interesting to explore whether mechanistic climates enhance the relationship between supervisors' procedural justice perceptions and procedural justice climate or whether, for a source of justice typically associated with organizations, organic structures (which provide fertile conditions for supervisors' influence on climate) also foster the development of procedural justice climates.

Fourth, our models reflect all hypothesized main, moderating, and mediating effect variables. However, they do not include controls for individual or situational factors, which would allow for a more robust test of the hypothesized relationships. For example, including controls for other sources and types of justice (and justice climate) could provide a clearer picture of the effects revealed in our study.

Finally, because all of our hypotheses were directional and theory driven, we used one-tailed significance tests. The use of one-tailed tests increases the possibility of Type I errors and raises the possibility of threats to statistical conclusion validity. However, our use is consistent with the guidelines provided by Kimmel (1957) and Jones (1952, 1954). Jones (1952) states, "a one-sided alternative is the most powerful test for all directional hypotheses, [therefore] it is strongly recommended that the one-tailed model be

adopted wherever its use is appropriate" (p. 46). Furthermore, Jones (1954) concludes that if the purpose of a test is to determine whether a particular directional prediction is supported by the data, then "the one-tailed test is not only appropriate, but it is an error to use a two-tailed test model" (p. 586). Thus, despite the increased possibility of Type I error, we believe the use of one-tailed tests is appropriate for our research.

Conclusions

This study highlights the importance of examining both the influence of supervisors and of work group structure on work group climate and behavior. The results suggest when structures are organic, perceptions of justice are more likely to trickle-down from one level to the next and influence the climate and behavior of work groups. It is clear our understanding of employee behavior is enhanced by considering both the social and organizational context in which it occurs.

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