A Multilevel Study of Leadership, Empowerment, and Performance in Teams

Gilad Chen
University of Maryland

Bradley L. Kirkman
Texas A&M University

Ruth Kanfer
Georgia Institute of Technology

Don Allen
The Home Depot

Benson Rosen
University of North Carolina at Chapel Hill

A multilevel model of leadership, empowerment, and performance was tested using a sample of 62 teams, 445 individual members, 62 team leaders, and 31 external managers from 31 stores of a Fortune 500 company. Leader–member exchange and leadership climate related differently to individual and team empowerment and interacted to influence individual empowerment. Also, several relationships were supported in more but not in less interdependent teams. Specifically, leader–member exchange related to individual performance partially through individual empowerment; leadership climate related to team performance partially through team empowerment; team empowerment moderated the relationship between individual empowerment and performance; and individual performance was positively related to team performance. Contributions to team leadership theory, research, and practices are discussed.

Keywords: teams, leadership, motivation, multilevel, performance

As a result of the widespread move to team-based organizations in industry, managers are often asked to lead and motivate not only individuals but also teams as a whole (Cohen & Bailey, 1997; Hackman, 2002; Kozlowski & Bell, 2003). Practical wisdom suggests that the pendulum has swung from managing individuals to managing teams, defined as two or more individuals who share common task objectives, perform interdependent tasks, and are mutually accountable for collective task outcomes (Kozlowski & Bell, 2003). Focusing leadership and motivation efforts more on teams, rather than individuals, raises important questions, such as how such efforts affect individual performance as well as the potential trade-offs that may occur when managing both individuals and teams (Chen & Kanfer, 2006; Kirkman & Rosen, 1999).

Perhaps owing to these same trends in industry, researchers have primarily focused their efforts at the team level of analysis without considering important individual-level processes in team contexts (Cohen & Bailey, 1997; Kozlowski & Bell, 2003). With few exceptions (e.g., Chen & Bliese, 2002; DeShon, Kozlowski, Schmidt, Milner, & Weichmann, 2004; Hofmann, Morgeson, & Gerras, 2003), researchers have yet to consider the dynamic interplay between the individuals within a team and the team as a whole despite consistent calls for this type of research. For example, Cohen and Bailey (1997) urged researchers to consider levels in organizations seriously when studying teams, as performance at one level may influence, or even conflict with, performance at another. Kozlowski and Bell (2003) stated that most research on team motivation simply assumes that knowledge on leading individuals extends to the team level and that we need a true multilevel theory of team leadership and motivation. Further, research has yet to systematically consider the top-down effects of contextual factors on individual functioning in teams as well as bottom-up influences of individuals on teams (Kozlowski & Bell, 2003).

Accordingly, the main purpose of our study was to extend previous research and answer these theoretically and practically relevant calls for multilevel team leadership and motivation research. We do so by examining team leader behaviors and employee motivation simultaneously at both the individual and team levels of analysis. In particular, we develop and test a multilevel model of leadership and motivation through the lens of employee *empowerment*, a motivational concept that, over the last two de-

cades, has grown in prominence for both researchers and practitioners (Kirkman & Rosen, 1997, 1999; Spreitzer, 1995; Thomas & Velthouse, 1990). Although empowerment has also been treated as a structural construct (e.g., Mills & Ungson, 2003), our focus is on *psychological* empowerment. At both the individual and team levels, psychological empowerment has been conceptualized as a multidimensional construct consisting of (a) *impact* (i.e., degree to which employees feel their work affects their organization), (b) *competence* (i.e., perceived ability to accomplish work-related tasks), (c) *meaningfulness* (i.e., intrinsic caring about work tasks), and (d) *choice* (i.e., perceived self-determination or autonomy at work) (Kirkman & Rosen, 1997, 1999; Thomas & Velthouse, 1990). In short, empowered individuals and teams are motivated to perform well because they believe they have the autonomy and capability to perform meaningful work that can impact their organization.

Although empowerment shares similar meaning at the individual and team levels, at the individual level the focus is on individuals' perceptions regarding how empowered they are personally, whereas at the team level the focus is on shared perceptions among team members with respect to their team's collective level of empowerment. Although team members' perceptions of individual empowerment are likely to be at least partially based on how empowered their team is, there could be important individual differences in perceptions of individual empowerment in teams (Chen & Kanfer, 2006). In particular, team leaders may differ in the extent to which they empower their team as a whole and also choose to empower individual members differently.

Yet with one recent exception (Seibert, Silver, & Randolph, 2004), researchers have yet to study empowerment at multiple levels of analysis. As such, we do not yet have answers to practical questions such as whether there are trade-offs or tensions when managers attempt to empower both individuals and teams. As Kirkman and Rosen (1999) stated, "research could help determine the specific impact of empowerment at multiple levels of analysis and thus identify optimal levels of empowerment at both the individual and team levels" (p. 70). Thus, we extend previous empowerment research by examining the phenomena at multiple levels of analysis and, in doing so, help to broaden empowerment theory across levels and provide managers who lead both individuals and teams with guidance on enhancing their leadership effectiveness through effective empowerment practices.

Finally, we also begin to explore plausible boundary conditions that affect the generalizability of empowerment theory across levels of analysis. In particular, an exploratory aspect of our study examines the extent to which the multilevel relationships we delineate may hold in teams of varying levels of interdependence (i.e., the extent to which team members need to mutually interact, communicate, and coordinate to accomplish their tasks; Saavedra, Earley, & Van Dyne, 1993). Although many authors have suggested team interdependence is an important characteristic that could affect the management and functioning of teams (e.g., Gully, 2000; Kozlowski & Bell, 2003), little research has examined whether leaders should manage teams with different levels of interdependence differently or fine tune their actions according to such team task characteristics.

Literature Review and Hypotheses

We summarize the general model and specific hypotheses tested in this study in Figure 1. In general, we propose that leader–member exchange (LMX) and leadership climate positively influ-
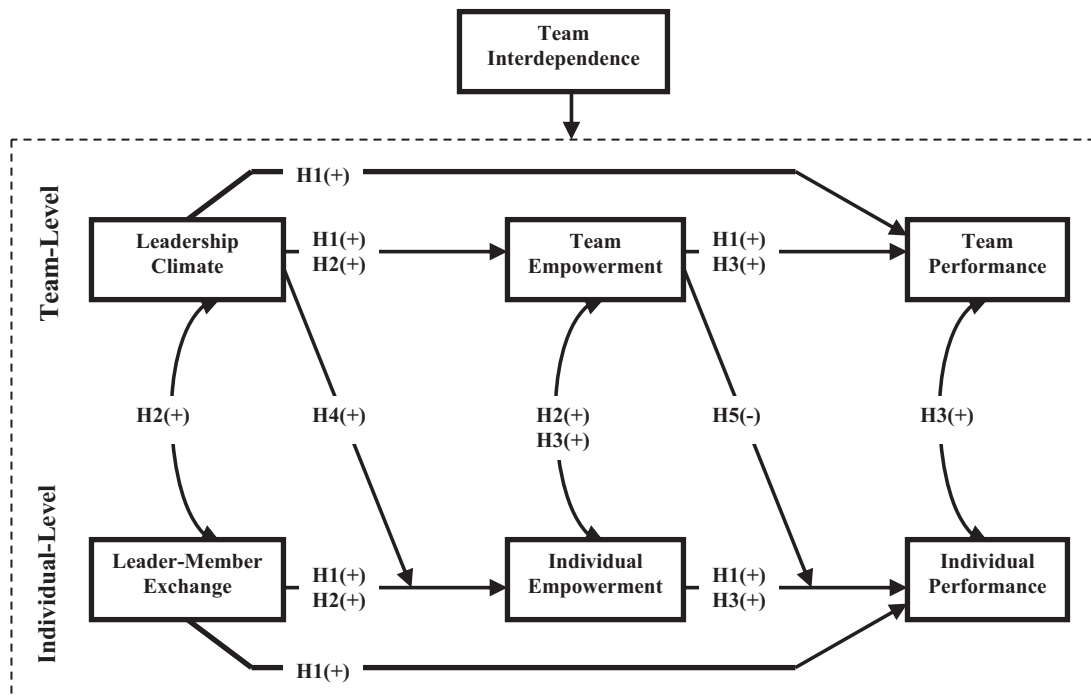

Figure 1. Multilevel model of empowerment in teams. H = hypothesis.

ence performance and do so partially through empowerment. However, we also propose that LMX relates more directly to individual than team empowerment, whereas leadership climate relates more directly to team than individual empowerment. Furthermore, we consider possible influences that cross levels, including direct, mediated, and moderating cross-level effects among individual- and team-level variables. Finally, we explore whether the proposed relationships hold across different levels of team interdependence.

Individual-Level and Team-Level Relationships

Although empowerment has been identified as an important predictor of performance at both the individual and team levels (Kirkman & Rosen, 1999; Spreitzer, 1995), research has yet to examine empowerment simultaneously at the individual and team levels of analysis, instead studying empowerment either at the individual or team level. As such, it remains to be seen whether the same leadership practices shown to empower individuals also empower teams, and vice versa, or whether team leaders need to use different practices to most effectively empower their members personally and collectively. The only multilevel study on empowerment to date, Seibert et al. (2004), focused on team-level empowerment climate, which, as we discuss below, is a *predictor* of empowerment and not empowerment itself. Seibert et al.'s study did not directly measure team empowerment and did not consider individual *and* team predictors of empowerment. Moreover, individual-level and team-level studies of empowerment have identified different aspects of leadership as predictors of individual and team empowerment (e.g., Kirkman & Rosen, 1999; Liden, Wayne, & Sparrow, 2000).

Individual-level research has shown that employees who develop better relationships with their leader (i.e., higher LMX) feel more empowered and, in turn, are more motivated to perform effectively (Chen & Klimoski, 2003; Liden et al., 2000). LMX is defined as the quality of the social exchange between leaders and followers, characterized by mutual trust, respect, and obligation (Gerstner & Day, 1997). Given that leaders can develop relationships of different quality with different team members, LMX has been considered an individual-level construct capturing individuals' perceptions regarding the quality of their personal relationship with their team leaders (Gerstner & Day, 1997; Hofmann et al., 2003). Accordingly, LMX is characterized as a discretionary stimulus (cf. Hackman, 1992) that exerts a direct influence on individual motivation in teams (Chen & Kanfer, 2006).

As shown in Figure 1, the motivational influence of LMX on individual performance is posited to occur at least in part through individual empowerment. Although there is also evidence that leaders develop better relationships with members who have performed better previously (Liden, Wayne, & Stilwell, 1993), there is support to our expectation that LMX and empowerment influence performance. In particular, in a longitudinal study, Chen and Klimoski (2003) found that newcomers who developed better relationships with their team leaders and team members subsequently performed better, as mediated by newcomer empowerment. In addition, there are ample longitudinal and experimental studies supporting the causal influence of self-efficacy (captured by the competence dimension of empowerment) on performance (see Bandura & Locke, 2003). Note that our study focuses on team leaders' ratings of members' performance. Given we did not

consider other mechanisms through which LMX might relate to ratings of performance, such as the extent to which a leader likes a team member, we expected individual empowerment to only partially mediate between LMX and individual performance.

At the team level, Kirkman and Rosen (1997) proposed a model that generalizes empowerment from individuals to teams. Their model proposes that team empowerment is highly similar to individual empowerment in terms of its underlying dimensions, predictors, and outcomes. As such, empowerment has been conceptualized as a multilevel construct, or a construct that shares similar meaning and functions similarly across levels (Chen, Mathieu, & Bliese, 2004). Indeed, work by Kirkman and colleagues has provided initial support for the generalizability of empowerment across levels and has demonstrated the positive influence of team empowerment on team effectiveness (Kirkman & Rosen, 1999; Kirkman, Rosen, Tesluk, & Gibson, 2004; Kirkman, Tesluk, & Rosen, 2001).

However, rather than focusing on LMX, team-level research has focused on the role of leader empowering behaviors directed toward the team as a whole as a predictor of team empowerment (Kirkman & Rosen, 1999). Such empowering behaviors include, for example, encouraging the team to set its own goals and self-manage its tasks and involving the team in decisions that affect members. Unlike LMX, empowering leadership behaviors focus on actions the leader takes to increase the motivation of the team as a whole rather than the quality of the relationship between a manager and a particular subordinate (cf. Chen & Bliese, 2002; Gavin & Hofmann, 2002). The set of empowering leadership behaviors identified by Kirkman and Rosen (1999; called "external team leader behavior") is highly similar to the notion of empowerment climate developed by Seibert et al. (2004). According to Seibert et al. (2004), empowerment climate represents "a shared perception regarding the extent to which an organization makes use of structures, policies, and practices supporting employee empowerment" (p. 334). In fact, Zohar (2000) has shown that team leaders help develop shared climates in teams through recurring practices that translate formal policies and procedures. Thus, to integrate Kirkman and Rosen's and Seibert et al.'s work, we use the term *leadership climate* to refer to ambient leadership behaviors (cf. Hackman, 1992), which are directed at the team as a whole and have the potential of developing shared, team-level empowerment (i.e., our focus is on *empowering* leadership climate).

Kirkman and Rosen's (1999) study showed that team empowerment partially mediated the relationship between leadership climate and team performance. Thus, both the individual-level and team-level portions of our model suggest that empowerment helps to explain the relationship between leadership and performance. However, we argue that leadership is manifested differently at the individual and team levels. At the individual level, leadership is conceptualized as the *personal* relationship that leaders develop with each team member (i.e., LMX), which can vary across team members, whereas at the team level, leadership is conceptualized as a climate variable that is *shared* among all team members. This differentiated, multilevel view of leadership in teams diverges from the assumption noted earlier that "leadership effects 'average out' across group members" (Kozlowski & Bell, 2003, p. 367). That is, the integration of dyadic (member-focused) and average (team-focused) views of leadership is an important departure of the present study from previous team research. Although we propose

that team leaders use different practices to empower individual members and teams, in line with prior research we expect that the *functional effects* (Morgeson & Hofmann, 1999) of such practices (i.e., empowerment and performance) will be similar at the individual and team levels.

> *Hypothesis 1*: Empowerment partially mediates the positive relationship between leadership and performance at both the individual and team levels of analysis.

Cross-Level Relationships

A second important aspect of our multilevel model pertains to the cross-level influences between individual- and team-level variables. Following open systems theory (Katz & Kahn, 1978), we argue that the individual-level and team-level phenomena of leadership, empowerment, and performance are highly related. More specifically, we propose that to better understand how empowerment develops and operates at each level we need to consider the empowerment phenomenon *across* levels (Chen & Kanfer, 2006; Kozlowski & Klein, 2000). Indeed, the cross-level effects we delineate have the potential to explain additional variance in both individual- and team-level components of the model.

We generally expect that each component of the model (leadership, empowerment, and performance) is positively related to its cross-level counterpart. First, leadership climate is likely to positively relate to LMX. Leaders who create a more motivating climate are expected to also develop positive relationships with their employees, as team members may be more likely to trust and respect leaders who delegate authority and help the team self-manage (Hackman, 2002). Also, team members who have better relationships with their leader are more likely to perceive the climate developed by their leader as positive. In other words, it is likely that leaders who do a better job empowering the team as a whole also do a better job empowering individual team members, and vice versa. Providing support for this theoretical expectation, Hofmann et al. (2003) found that safety climate developed by leaders was positively related to LMX.

Second, we expect that individual and team empowerment are positively related. It is difficult to empower one individual team member to do his or her own tasks without empowering others to do their tasks, given the typically high interdependence among individuals in teams. Also, according to social learning principles (Bandura, 1997), motivation can be contagious—individual team members may be more motivated to perform their own tasks when other members share enthusiasm to perform their tasks. For instance, individuals may be more confident to perform their own roles (i.e., have high competence beliefs) when they believe members of their teams are capable of performing well. Likewise, team members may be more likely to feel they are performing meaningful tasks when others on their team feel similarly. In other domains, researchers have argued that affect can transfer from one team member to another, resulting in positive correlations between individual and team affect (Kelly & Barsade, 2001). In line with this expectation, research has detected positive relationships between the competence dimensions of empowerment across levels—that is, between self-efficacy and collective efficacy (see Chen & Kanfer, 2006).

Third, we also expect that individual and team performance are positively related. It is likely that high performance norms develop

in more effective teams, which in turn drive better performance at the individual level, and that over time individuals who do not perform according to team norms will depart the team or organization (Schneider, Smith, & Sipe, 2000). Moreover, in interdependent teams, individual performance may be related to team performance, given that each member's behavior is highly dependent on other members' behavior. Indeed, as noted by Ployhart (2004), human resources management models often assume that individual performance aggregates to affect work unit and, eventually, organizational performance. In support, Chen (2005) found a positive relationship between individual and team performance.

Detecting these three cross-level relationships would help to explain the interplay between individual and team processes that influence leadership, empowerment, and performance. Moreover, these cross-level relationships together with the expected individual- and team-level relationships lead us to formally hypothesize several *mediated* cross-level effects, linking leadership climate to individual empowerment and team empowerment to individual performance. Specifically, through its expected influences on team empowerment and LMX, higher leadership climate is likely to also promote individual empowerment. In addition, higher team empowerment is likely to enhance individual performance through its anticipated impact on team performance and individual empowerment. Thus, collectively these direct and mediated cross-level effects not only link the individual- and team-level models of empowerment but further help account for additional variance in individual empowerment and performance beyond what would be explained in individual-level predictors alone.

> *Hypothesis 2*: LMX and team empowerment mediate the positive influence of leadership climate on individual empowerment.

> *Hypothesis 3*: Individual empowerment and team performance mediate the positive influence of team empowerment on individual performance.

In addition to the cross-level direct and mediated effects, we also expect that team-level variables, particularly leadership climate and team empowerment, will influence individual-level *relationships* in the model (i.e., cross-level interactions). Such cross-level interactions would suggest that individual-level relationships among leadership, empowerment, and performance differ depending on levels of leadership climate and team empowerment, hence strengthening the dependence of individual empowerment on team-level phenomena (cf. Kozlowski & Klein, 2000). Cross-level interactions would also help address the question of potential trade-offs between levels discussed in our introduction.

First, leadership climate is likely to moderate the positive influence of LMX on team members' individual sense of empowerment. Although leadership climate develops a shared sense of team empowerment among team members, members with more positive LMX are more likely to believe further that the leader would also empower them personally more relative to other members, given their particularly high levels of mutual trust and respect. On the other hand, in the absence of leadership climate, high LMX may be insufficient to produce high levels of individual empowerment. Thus, leadership climate

constitutes a "situational affordance" that strengthens the positive effect of individual motivators, such as LMX, on individual motivation, resulting in a more conducive context for LMX to enhance individual empowerment (Chen & Kanfer, 2006). Supporting this expected cross-level interaction, Hofmann et al. (2003) found that LMX had more positive impact on safety-related motivation when safety climate was higher.

> *Hypothesis 4*: Leadership climate moderates the influence of the quality of LMX on individual empowerment, such that the influence of LMX becomes more positive as leadership climate becomes more positive.

Second, we expect that team empowerment attenuates or weakens the positive impact of individual empowerment on individual performance. In interdependent teams, the performance of each member on his or her role in the team is a function of not only individual-level processes but also team-level processes, which can either facilitate or hinder individual functioning in teams (Chen & Kanfer, 2006). Because team empowerment triggers effective team processes (Chen & Kanfer, 2006), it can supplement or compensate for lower individual empowerment and motivation by reducing the difficulty or complexity of individual tasks in the team. For instance, in more empowered teams, the individual tasks of each member are simplified as a result of increased backup behaviors among members and improved team communication and coordination (see Mathieu, Gilson, & Ruddy, 2006). Thus, we expect that when team empowerment is high, individuals will perform at high levels irrespective of individual empowerment. In contrast, we expect individual empowerment to more positively relate to individual performance when team empowerment is low.

> *Hypothesis 5*: Team empowerment moderates the influence of individual empowerment on individual performance, such that the influence of individual empowerment becomes less positive as team empowerment becomes more positive.

Potential Impact of Team Interdependence on Relationships in the Model

The logic underlying our hypotheses is based, in large part, on the interdependent nature of teams. Therefore, team interdependence might be a critical boundary condition for the relationships we delineate. Although the importance of interdependence in team-level phenomena has long been recognized (e.g., Saavedra et al., 1993), there have been repeated (and largely unanswered) calls to examine whether team effectiveness models generalize across different levels of interdependence (e.g., Gully, 2000; Kozlowski & Bell, 2003), and research on team empowerment has rarely considered the possible moderating effects of team interdependence (Kirkman et al., 2004, is a recent exception).

Given the limited amount of previous team and multilevel research that considers team interdependence (Kozlowski & Bell, 2003) and owing to the large number of paths included in our model, we chose to examine the role of team interdependence in an exploratory manner, rather than delineate explicit hypotheses regarding its impact on the model. However, we generally expected that the multilevel model, and Hypotheses 1–5, would be better supported in high- rather than low-interdependent teams for three reasons. First, members of more interdependent teams interact more closely with each other and thus are more likely to share perceptions of team empowerment; that is, measures of team empowerment are likely to be more meaningful and valid in more interdependent teams (cf. Chen et al., 2004; Kozlowski & Klein, 2000). Second, and related to the first point, cross-level effects are more likely to occur in interdependent teams, where individual and team experiences, perceptions, and behaviors are more tightly coupled (Kozlowski & Bell, 2003). Finally, empowerment is a more critical precondition for effective performance in highly interdependent teams, where employees need to have greater discretion regarding how and when to accomplish their work (Kirkman & Rosen, 1997). In fact, the increased need to empower employees in organizations is often attributable to the proliferation of team-based, interdependent work structures (e.g., Kirkman & Rosen, 1999; Thomas & Velthouse, 1990). Thus, exploring the following research question can help test the boundaries of our multilevel model of leadership, empowerment, and performance.

> *Research question*: Does team interdependence affect multilevel relationships among leadership, empowerment, and performance?

Method

Sample

The sample consisted of 445 members from 62 teams in 31 stores of a Fortune 500 home improvement company located throughout the United States, as well as 62 team leaders and 31 managers, who completed surveys during regular work hours. The sample represented a 75% response rate. Average team member age was 37, and 64% were male; 50% were White, 25% were African American, 22% were Hispanic, and 3% were either Asian or Native American. In each store we sampled two types of teams—one *freight* team and one *receiving* team; 312 employees belonged to the 31 freight teams (range = 4 to 22 respondents per team) and 133 employees belonged to the 31 receiving teams (range = 2 to 8 respondents per team). Both teams worked mostly at night toward a common goal of stocking and preparing the store for each day's business. Each team had an internal team leader responsible for managing team members, and in each store the freight and receiving team leaders reported to the same manager, who was a part of the store's management team. However, prestudy interviews we conducted with 15 managers responsible for designing, staffing, and managing the performance of these teams, as well as on-site discussions with over 20 team leaders and team members, indicated clearly that the freight teams were more interdependent than the receiving teams.

In each store, receiving teams were responsible for ordering, accepting, and recording incoming merchandise arriving at the stores, whereas freight teams were responsible primarily for maintaining a sufficient number of products on store shelves, recording product inventories, and more generally preparing the store for its opening every day. Members of the receiving teams worked fairly independently of one another, with each member assigned unique responsibility for receiving merchandise from different providers

(i.e., work in these teams can be characterized as pooled, or low, interdependence; cf. Saavedra et al., 1993). In contrast, members of the freight teams were more interdependent. Team members met daily as a team to decide which areas of the store had to be stocked and how to distribute the work among members so that areas of the store that required more work were adequately staffed. Moreover, members of the freight teams were cross-trained to be able to maintain different areas in the store (e.g., timber, paint, home appliances). The level of interdependence in the freight team reflected reciprocal, or high, interdependence (cf. Saavedra et al., 1993), because different sets of team members interacted with each other to a different extent at different times. Thus, in each store the nature of work in the freight teams was more interdependent than in the receiving teams.

Measures

Leadership and empowerment. Team members completed measures of LMX, leadership climate, individual empowerment, and team empowerment (1 = *strongly disagree*; 7 = *strongly agree*). We used an 8-item LMX measure (e.g., "I would characterize the working relationship I have with my team leader as extremely effective"), which Bauer and Green (1996) modified from the original LMX–7 measure developed by Scandura and Graan (1984). Leadership climate was measured using a 14-item scale developed by Kirkman and Rosen (1999) (e.g., "Our team leader gives my team many responsibilities").

Team members also completed Spreitzer's (1995) 12-item individual empowerment measure (e.g., "I am confident about my ability to do my job") and Kirkman et al.'s (2004) 12-item team empowerment measure, shortened from an original 26-item measure (Kirkman & Rosen, 1999) (e.g., "My team believes it can be very productive"). Given that we focused on overall empowerment, and in line with prior research (Chen & Klimoski, 2003; Kirkman & Rosen, 1999; Spreitzer, 1995), the four empowerment dimensions (impact, competence, meaningfulness, choice) were collapsed into an overall individual empowerment scale and an overall team empowerment scale. Note that the referent of the LMX and individual empowerment measures was the individual team member, whereas the referent of the leadership climate measure was the internal team leader, and the referent of the team empowerment measure was the team.

Performance. The internal freight and receiving team leaders were asked to rate the *individual performance* of each of their team members using a role performance measure developed by Welbourne, Johnson, and Erez (1998; 1 = *needs much improvement*; 5 = *excellent*). We used only the 12 items capturing the task role (e.g., "Quantity of work output"), team role (e.g., "Making sure his/her work team succeeds"), and organizational role (e.g., "Doing things to promote the company"), given other roles captured by the scale (innovator and career) were less applicable to this context. Scores on the three role dimensions were highly related (average $r = .80$, $p < .05$), and so the 12 items were averaged into an overall individual performance scale.

In each store, the external manager who oversaw the freight and receiving team leaders rated the performance of the freight team and the performance of the receiving team using a 5-item *team performance* measure adopted from Kirkman and Rosen (1999) (e.g., "Completes its tasks on time"; 1 = *strongly disagree*; 7 =

strongly agree). Note that team leaders were highly familiar with the individual performance of each team member, and the managers who oversaw both teams were highly familiar with the performance of these teams in their store.

Controls. In addition to the substantive measures, we included individual- and team-level control measures. At the individual level, we controlled for employees' tenure in their teams (i.e., number of months in their position), given the documented impact of experience on job performance (McDaniel, Schmidt, & Hunter, 1988). We also controlled for individuals' perceived organizational support using Eisenberger, Cummings, Armeli, and Lynch's (1997) eight-item measure (e.g., "My organization cares about my opinion"). Perceived organizational support focuses on broader organizational support, as opposed to support provided by specific team leaders (as captured by the LMX and leadership climate measures), and thus, controlling for perceived organizational support can help to better support the *unique* influences of LMX and leadership climate. Controlling for perceived organizational support can also help remove some single-source biases (e.g., respondents' desire to appear consistent; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), particularly between measures collected from team members. At the team level, we controlled for team size, given it varied substantially across teams. In particular, larger stores with a higher volume of sales had larger teams. Thus, controlling for team size also at least partially controlled for store differences such as size and volume of sales.

Confirmatory Factor Analyses

We conducted a series of confirmatory factor analyses in LISREL to examine whether the LMX, leadership climate, individual empowerment, and team empowerment measures, all of which were collected from the same source (team members), captured distinct constructs. These tests were conducted at the individual level, because the team-level sample size was much lower. However, given that individual perceptions (rather than shared team perceptions) of leadership climate and team empowerment are likely to be more highly related to LMX and individual empowerment, as compared with respective cross-level relationships involving these variables, these individual-level tests are more conservative. To maintain favorable indicator-to-sample-size ratio, we used four indicators for each of the four constructs; we used scores on each of the four empowerment dimensions as separate indicators of individual and team empowerment, and randomly created four parcels of items for the LMX and leadership climate constructs.

Results showed that the hypothesized four-factor model fit the data well, $\chi^2(98, N = 416) = 340.52$, comparative fit index (CFI) = .97, root-mean-square error of approximation (RMSEA) = .08. Relative to the hypothesized model, an alternative model in which indicators of the two leadership variables were set to load on a single construct fit the data significantly worse, $\Delta\chi^2(1, N = 416) = 836.35$, $p < .05$, CFI = .91, RMSEA = .16, as did a second alternative model, in which indicators of the two empowerment variables were loaded on a single factor, $\Delta\chi^2(1, N = 416) = 274.95$, $p < .05$, CFI = .95, RMSEA = .11. These results support the discriminant validity of the LMX, leadership

climate, individual empowerment, and team empowerment measures.[1]

Aggregation Tests

To support the aggregation of leadership climate and team empowerment ratings, we calculated intermember reliability (ICC1 and ICC2) and tested whether average scores differed significantly across teams (indicated by an F test from a one-way analysis of variance [ANOVA] contrasting team means on each variable). ICC1 indicates the proportion of variance in ratings due to team membership, whereas ICC2 indicates the reliability of team mean differences (Bliese, 2000). For leadership climate, we obtained good support for aggregation using both the freight team data (ICC1 = .18; ICC2 = .68), $F(30, 281) = 3.45$, $p < .05$, and the receiving team data (ICC1 = .25; ICC2 = .59), $F(30, 102) = 2.46$, $p < .05$, which was expected because members of the same team interacted with and rated the same team leader, irrespective of team interdependence.

Unlike leadership climate, for team empowerment we found good support for aggregation using the high-interdependent freight team data (ICC1 = .15; ICC2 = .65), $F(30, 281) = 2.84$, $p < .05$, but not using the low-interdependent receiving team data (ICC1 = .03; ICC2 = .11), $F(30, 102) = 1.12$, ns. Moreover, a one-way ANOVA showed that the average within-team variance (which indicates lack of agreement; Bliese, 2000) in team empowerment perceptions was significantly lower in freight teams ($M = 0.74$; $SD = 0.59$) than in receiving teams ($M = 1.39$; $SD = 1.39$), $F(1, 60) = 3.84$, $p < .05$. These results support the notion that the freight teams were more interdependent than the receiving teams, as more highly interdependent members are more likely to interact with each other and thus share perceptions of team empowerment. Even though results did not support the aggregation of team empowerment in receiving teams, we still examined team empowerment in these teams for comparison purposes.[2]

Analyses

We conducted all analyses on the full sample data (combined across freight and receiving teams), as well as separately on freight team and receiving team data. Individual-level analyses of the full sample data involved three levels: individual (Level 1), team (Level 2), and store (Level 3), whereas team-level analyses of the full sample data involved only two levels (team and store). For analyses conducted on separate freight and receiving team data, individual-level tests included two levels (individual and team), whereas team-level tests were single level (given there was only one freight and one receiving team per store). Following Bliese (2002), multilevel analyses were conducted using random coefficient modeling (RCM; also referred to as hierarchical linear modeling; Gavin & Hofmann, 2002) in the Nonlinear and Linear Mixed Effects program for S-PLUS and R (Pinheiro & Bates, 2000).

RCM provides the correct parameter estimates and significance tests for multilevel and nonindependent data by estimating within-team and between-team variances and covariances separately, and by using the correct standard errors for both within-team (i.e., individual-level) and between-team (i.e., team-level) effects (see Bliese, 2002). For instance, RCM allows for accurate and simul-

taneous estimation of (a) the individual-level effect of LMX on the *within-team* portion of individual empowerment, (b) the cross-level effect of leadership climate on the *between-team* portion of individual empowerment, and (c) the cross-level effect of leadership climate on the *within-team* effect of LMX on individual empowerment (i.e., the cross-level interaction effect of Leadership Climate × LMX on individual empowerment). These analyses can also be extended to include more levels, such as in the three-level tests of individual-level outcomes in the full sample, in which case the variances and covariances are broken down into three (as opposed to just two) different levels. When analyzing the single-level tests (i.e., tests of team-level outcomes in the separate freight team and receiving team data), we used ordinary least squares regression. To facilitate comparability of individual- and team-level results, we standardized all measures within their respective levels such that parameter estimates essentially reflected standardized (β) coefficients (Chen, Bliese, & Mathieu, 2005). Standardization of variables also meant that the variables were in effect grand-mean centered (Gavin & Hofmann, 2002).

Results

The individual- and team-level descriptive statistics, internal consistency reliability, and correlations are provided in Table 1. There are three noteworthy results. First, the highly interdependent freight teams and the low-interdependent receiving teams differed significantly ($p < .05$) on members' team tenure: Members of the receiving teams were in their teams on average almost 1 year longer than members of freight teams. Second, the size of the receiving teams was significantly ($p < .05$) smaller than the size of the freight teams—a difference of about seven members. We consider the possible implications of these differences in the

---

[1] The correlations between team means for LMX and leadership climate ($r = .87$, $p < .05$) and team means for individual empowerment and team empowerment ($r = .57$, $p < .05$) were high. However, our confirmatory and aggregation analyses provided support for the discriminant validity of these four measures. Moreover, we used team means for leadership climate and team empowerment and used individual-level scores for LMX and individual empowerment in our analyses. The correlations between team means of leadership climate and individual LMX scores ($r = .42$, $p < .05$) and team means for team empowerment and individual empowerment scores ($r = .20$, $p < .05$) were substantially lower.

[2] The ICCs for individual empowerment were much lower than those for team empowerment in both the freight teams (ICC1 = .02, ICC2 = .16), $F(30, 281) = 1.19$, ns, and the receiving teams (ICC1 = −.10, ICC2 = −.61), $F(30, 102) = 0.62$, ns, supporting the distinct levels at which these two measures reside. The negative ICC values obtained in receiving teams are indicative of substantial within-team (i.e., individual-level) variability, relative to between-team variability, in individual empowerment (see Bliese, 2000). Although less pronounced, aggregation statistics were also lower for LMX relative to leadership climate in both the freight teams (ICC1 = .08, ICC2 = .45), $F(30, 281) = 1.82$, $p < .05$, and the receiving teams (ICC1 = .22, ICC2 = .55), $F(30, 102) = 2.24$, $p < .05$. For individual performance, significant ICCs were detected in both the freight teams (ICC1 = .25, ICC2 = .77), $F(30, 281) = 4.43$, $p < .05$, and the receiving teams (ICC1 = .33, ICC2 = .68), $F(30, 102) = 3.09$, $p < .05$, which were expected, as the same team leader rated members in each of the teams (i.e., the individual performance data exhibited nonindependence, as expected; cf. Bliese, 2000).

Table 1
Descriptive Statistics and Correlations

Variable	Data source	Freight teams		Receiving teams		1	2	3	4	5
		M	SD	M	SD					
Individual level										
1. Months in position	CR	12.34	8.54	23.44	28.67	—	−.15	.19	−.03	.17
2. Perceived organizational support	TM	4.19	1.35	4.06	1.33	−.02	(.85)	.32*	.37*	.20*
3. Leader–member exchange	TM	4.88	1.46	4.74	1.59	−.04	.49*	(.93)	.31*	.46*
4. Individual empowerment	TM	5.69	0.88	5.76	0.94	.01	.44*	.43*	(.88)	.19*
5. Individual performance	ILD	3.57	0.87	3.81	0.82	.17*	.09	.20*	.21*	(.97)
Team level										
1. Team size	CR	12.55	6.40	5.42	1.91	—	.01	.03	−.10	
2. Leadership climate	TM	4.87	0.63	4.67	0.89	−.14	(.93)	.38*	−.31	
3. Team empowerment	TM	5.51	0.51	5.55	0.62	−.14	.52*	(.91)	−.28	
4. Team performance	ELD	5.06	1.35	5.21	1.18	.09	.54*	.61*	(.97)	

Note. Internal consistency reliability estimates (alphas) are on the diagonal. Relationships below the diagonal are from high-interdependent freight teams ($n = 312$ individuals in 31 teams); relationships above the diagonal are from low-interdependent receiving teams ($n = 133$ individuals in 31 teams). CR = company records; TM = team members; ILD = internal team leader; ELD = external leaders or managers.
* $p < .05$.

Discussion section. Finally, as we elaborate below when discussing the hypotheses tests, several relationships were substantially different in the freight and receiving teams.

Overview of Hypotheses Tests

The multilevel hypotheses tests are summarized in Tables 2, 3, and 4. To allow for examination of the research question, pertaining to the potential impact of team interdependence on Hypotheses 1–5, each test was conducted on the full sample and then separately using freight team and receiving team data. Furthermore, in analyses of the full sample we also controlled for team type and then tested whether team type moderated the hypothesized relationships (for brevity, we report only results of team type as a moderator in the text). Table 2 summarizes individual-level RCM tests and team-level ordinary least squares regression tests of Hypothesis 1 following the hierarchical mediation procedures outlined in Baron and Kenny (1986). Table 3 shows the hierarchical cross-level RCM tests of Hypotheses 2–5, which again followed Baron and Kenny's procedures. Hypotheses 4 and 5 were tested by adding the cross-level interaction terms after partialing out the main effects (see Table 3). Finally, because recent research suggests the Baron and Kenny mediation test is too conservative and that indirect effects can still be significant when Baron and Kenny's criteria are not fully met (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002), we also tested the mediation hypotheses (Hypotheses 1–3) using Sobel's (1982) test of indirect effects, which MacKinnon et al. found to provide better balance between Type I and Type II errors (see Table 4). We used the partialed estimates and standard errors from Tables 2 and 3 in the Sobel tests.

Tests of Hypothesis 1

Hypothesis 1 predicted that empowerment partially mediates the positive relationship between leadership and performance at both the individual and team levels of analysis. As shown in the upper portion of Table 2, in analyses of the full sample and both types of

teams, LMX and perceived organizational support positively predicted individual empowerment, and months in position and LMX positively predicted individual performance. However, although individual empowerment positively predicted individual performance in the full sample and high-interdependent freight teams, it was not a significant predictor in the low-interdependent receiving teams. In addition, as shown in Table 4, the indirect relationship LMX had with individual performance through individual empowerment was significant in the full sample and in the freight teams but not in the receiving teams. Additional moderated analyses of the full sample data showed that after adding the Team Type × LMX interaction term in a third step, team type significantly moderated the influence of LMX on individual performance ($\beta = -.23$, $p < .05$), but it did not moderate the influence of individual empowerment on individual performance ($\beta = .13$, *ns*). Thus, individual empowerment partially mediated the relationship between LMX and individual performance, albeit it did so more strongly in high-interdependent freight teams than in low-interdependent receiving teams.

At the team level, results showed that leadership climate was positively and significantly related to team empowerment in the full sample and in both high-interdependent freight teams and low-interdependent receiving teams (lower portion of Table 2). Also, in high-interdependent freight teams, the positive relationship leadership climate had with team performance became nonsignificant when team empowerment was introduced; team empowerment was significantly, positively related to team performance; and the indirect relationship leadership climate had with team performance through team empowerment was significant (see Tables 2 and 4). In contrast, in analyses of both the full sample and low-interdependent receiving teams, neither leadership climate nor team empowerment were significantly related to team performance, and the indirect relationship leadership climate had with team performance through team empowerment was nonsignificant. Additional analyses of the full sample detected team type as a significant moderator of both the leadership climate → team performance ($\beta = .55$, $p < .05$) and the team empowerment →

Table 2
Individual-Level and Team-Level Mediation Analyses of Performance (Hypothesis 1)

Step and variable	Full sample		Freight teams		Receiving teams	
	β	SE	β	SE	β	SE
Individual-level tests						
DV = individual empowerment						
1. Months in position	.02	.04	.03	.05	.02	.08
Perceived organizational support	.31*	.05	.31*	.06	.29*	.09
Team type[a]	−.12	.10				
Leader–member exchange (LMX)	.24*	.05	.28*	.06	.19*	.09
DV = individual performance						
1. Months in position	.15*	.04	.16*	.05	.18*	.07
Perceived organizational support	.00	.05	−.03	.06	.10	.08
Team type[a]	−.24	.15				
LMX	.26*	.05	.23*	.06	.37*	.08
2. Months in position	.14*	.04	.16*	.05	.18*	.07
Perceived organizational support	−.03	.05	−.08	.06	.09	.08
Team type[a]	−.23	.14				
LMX	.23*	.05	.18*	.06	.36*	.08
Individual empowerment	.11*	.05	.16*	.06	.02	.07
Team-level tests						
DV = team empowerment						
1. Team size	−.05	.15	−.06	.14	.08	.60
Team type[a]	−.11	.29				
Empowering leadership climate	.44*	.12	.56*	.18	.36*	.17
DV = team performance						
1. Team size	.15	.15	.17	.16	−.28	.52
Team type[a]	−.38	.22				
Leadership climate	.19	.10	.74*	.21	−.25	.14
2. Team size	.15	.15	.20	.14	−.27	.52
Team type[a]	−.38	.23				
Leadership climate	.20	.12	.43	.21	−.19	.16
Team empowerment	−.01	.11	.55*	.19	−.16	.16

Note. DV = dependent variable.
[a] 1 = Receiving/low interdependence; 2 = Freight/high interdependence.
* $p < .05$.

team performance ($\beta = .66$, $p < .05$) relationships. Thus, mirroring the individual-level results, team empowerment partially mediated the relationship between leadership climate and team performance in high- but not low-interdependent teams.

In sum, with regard to Hypothesis 1, team interdependence did indeed impact the relationships proposed in our model in that Hypothesis 1 was supported in high- but not in low-interdependent teams. However, team interdependence was a more substantial moderator at the team level than at the individual level, as team type moderated both the leadership and empowerment estimates at the team level but only the leadership estimate at the individual level.

Tests of Hypotheses 2 and 3

Hypothesis 2 stated that leadership climate positively relates to individual empowerment through its positive relationships with team empowerment and LMX. As shown in the upper portion of Table 3, leadership climate significantly and positively predicted LMX in the full sample and in both the separate

freight team and receiving team data. Although leadership climate did not significantly relate to individual empowerment (middle portion of Table 3), team empowerment significantly and positively related to individual empowerment, albeit only in the full sample data. In addition, in the full sample, leadership climate had a significant indirect effect on individual empowerment through its positive relationships with both team empowerment and LMX (see Table 4). Leadership climate had a significant indirect effect on individual empowerment through LMX, but not team empowerment, in high-interdependent freight teams, and it did not indirectly predict individual empowerment in low-interdependent receiving teams. Additional analyses of the full sample (in which team type was added as a moderator) failed to detect any significant moderating effects on leadership climate's influence on the mediators (LMX and team empowerment) and on individual empowerment, or on the influences of the mediators on individual empowerment. Thus, Hypothesis 2 received support in the full sample, and there was no evidence that team interdependence affected the indirect influences of leadership climate on individual empowerment.

Table 3
Cross-Level Analyses of Individual-Level Outcomes (Hypotheses 2, 3, 4 and 5)

Step and variable	Full sample		Freight teams		Receiving teams	
	β	SE	β	SE	β	SE
DV = LMX						
1. Months in position	.03	.04	−.02	.05	.07	.07
Perceived organizational support	.41[*]	.04	.45[*]	.05	.32[*]	.07
Team size	−.03	.05	−.04	.05	.09	.07
Team type[a]	.02	.12				
Leadership climate (H2)	.34[*]	.04	.26[*]	.05	.48[*]	.07
DV = individual empowerment						
1. Months in position	.03	.05	.04	.05	.03	.08
Perceived organizational support	.42[*]	.04	.45[*]	.05	.35[*]	.09
Team size	−.06	.06	−.06	.05	−.01	.08
Team type[a]	−.03	.13				
Leadership climate (H2)	.04	.04	.02	.05	.07	.08
2. Months in position	.03	.04	.04	.05	.04	.08
Perceived organizational support	.28[*]	.05	.29[*]	.06	.25	.10
Team size	−.03	.05	−.04	.05	−.03	.08
Team type[a]	−.04	.12				
Leadership climate (H2)	−.10	.05	−.10	.06	−.07	.10
LMX (H2)	.28[*]	.05	.30[*]	.06	.22[*]	.11
Team empowerment (H2)	.12[*]	.05	.11	.06	.13	.09
3. Leadership Climate × LMX[b] (H4)	.13[*]	.05	.11	.08	.15	.08
DV = individual performance						
1. Months in position	.15[*]	.04	.16[*]	.05	.18[*]	.07
Perceived organizational support	−.01	.05	−.04	.06	.11	.08
Team size	.04	.11	−.01	.11	.11	.11
Team type[a]	−.28	.19				
Leadership climate	.06	.08	.04	.13	.03	.13
LMX	.25[*]	.05	.22[*]	.06	.35[*]	.09
Team empowerment (H3)	.10	.08	.10	.12	.03	.13
2. Months in position	.14[*]	.04	.15[*]	.05	.17[*]	.07
Perceived organizational support	−.05	.05	−.08	.06	.09	.09
Team size	.01	.11	−.07	.11	.12	.11
Team type[a]	−.23	.19				
Leadership climate	.06	.08	−.04	.13	.06	.13
LMX	.22[*]	.05	.16[*]	.06	.35[*]	.09
Team empowerment (H3)	.06	.08	−.05	.13	.05	.13
Individual empowerment (H3)	.11[*]	.05	.16[*]	.06	.02	.07
Team performance (H3)	.14	.08	.31[*]	.14	.12	.12
3. Team × Individual Empowerment[b] (H5)	−.10	.05	−.12[*]	.06	−.06	.10

Note. DV = dependent variable; LMX = leader–member exchange; H = hypothesis.
[a] 1 = Receiving/low interdependence; 2 = Freight/high interdependence. [b] Main effect variables were included in this model, although their estimates are not reported.
[*] $p < .05$.

Hypothesis 3 stated that team empowerment positively relates to individual performance through its positive relationship with team performance and individual empowerment. In the first step of cross-level analyses of individual performance (lower portion of Table 3), neither leadership climate nor team empowerment were significant predictors in the full sample or in either type of team. In the second step of these analyses, individual empowerment was significantly related to individual performance in the full sample and in freight teams (but not in receiving teams), and team performance was related to individual performance only in freight teams. Further, the indirect relationships that team empowerment had with individual performance through individual empowerment and team performance were nonsignificant in the full sample and in both team types (Table 4). Finally, none of these relationships were significantly moderated by team type. Thus, Hypothesis 3

was not supported, and results did not significantly differ between high- and low-interdependent teams.

Tests of Hypotheses 4 and 5

To test Hypotheses 4 and 5, we entered the cross-level interaction terms in a third and final step of the cross-level tests shown in Table 3. Hypothesis 4 stated that leadership climate would moderate the relationship between LMX and individual empowerment, such that the relationship would be stronger when leadership climate is stronger. In analyses of individual empowerment, the cross-level Leadership Climate × LMX interaction term was significant and positive in the full sample and nonsignificant and of similar direction and magnitude in the freight and receiving teams. Additional analyses failed to find a significant moderating effect

Table 4
Tests of Indirect Effects (Hypotheses 1, 2, and 3)

	Full sample		Freight teams		Receiving teams	
Path	Indirect effect	z	Indirect effect	z	Indirect effect	z
Individual-level indirect paths						
LMX → Ind. empowerment → Ind. performance (H1)	.03	1.97*	.04	2.07*	.00	0.26
Cross-level indirect paths						
Leadership climate → LMX → Ind. empowerment (H2)	.10	4.65*	.08	3.57*	.11	1.90
Leadership climate → Team empowerment → Ind. empowerment (H2)	.05	1.96*	.06	1.52	.05	1.11
Team empowerment → Ind. empowerment → Ind. performance (H3)	.01	1.55	.02	1.44	.00	0.23
Team empowerment → Team performance → Ind. performance (H3)	.00	−0.08	.17	1.70	−.02	−0.58
Team-level indirect paths						
Leadership climate → Team empowerment → Team empowerment (H1)	.00	−0.09	.31	2.06*	−.06	−0.81

Note. LMX = leader–member exchange; Ind. = individual; H = hypothesis.
* $p < .05$.

for team type for this interaction, suggesting the interaction effect was similar irrespective of team interdependence. As shown in Figure 2, in the full sample, LMX related more positively to individual empowerment as leadership climate increased, supporting Hypothesis 4.

Hypothesis 5 stated that team empowerment would moderate the relationship between individual empowerment and individual performance, such that the relationship would be weaker when team empowerment is higher. In analyses of individual performance, the cross-level Individual Empowerment × Team Empowerment interaction term was significant in the high-interdependent freight teams but not in the full sample or in low-interdependent receiving teams. Although team type did not significantly moderate this cross-level interaction, it was supported in high-interdependent but not in low-interdependent teams. As shown in Figure 3, in freight teams, as hypothesized, the relationship between individual empowerment and individual performance was more positive at lower rather than higher levels of team empow-

erment, and individual performance remained high when team empowerment was high irrespective of levels of individual empowerment. These results support Hypothesis 5, albeit only in the high-interdependent teams.

Auxiliary Analyses

To help strengthen the validity of the hypothesized model, we conducted several additional team-level analyses. First, in RCM analyses of the full sample, after controlling for team size and team type, both leadership climate ($\beta = .47$, $p < .05$) and average levels of individual empowerment in teams ($\beta = .48$, $p < .05$) uniquely predicted team empowerment, whereas average levels of LMX in teams did not ($\beta = -.23$, *ns*). Similar results were obtained in separate analyses of the freight team and receiving team data. These results suggest that leadership climate predicted team empowerment more strongly than LMX and that individual and team empowerment were positively related.
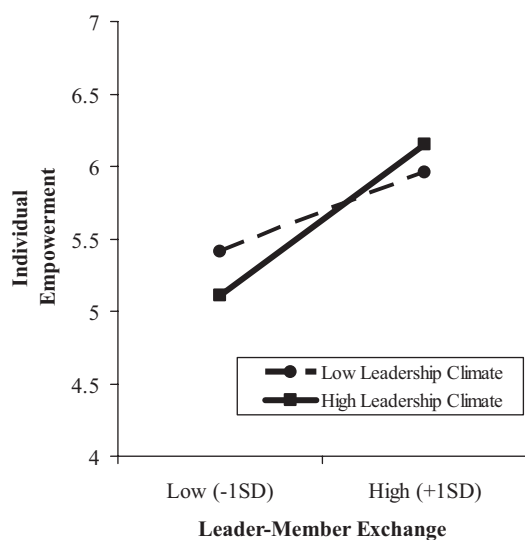

Figure 2. Leader–Member Exchange × Leadership Climate effect on individual empowerment (based on full sample data).
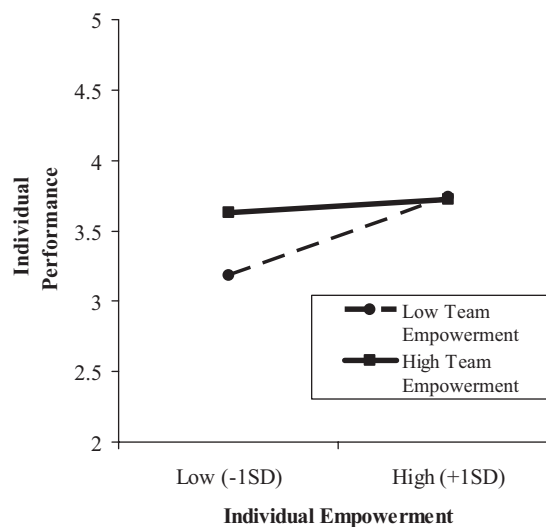

Figure 3. Individual Empowerment × Team Empowerment effect on individual performance (based on freight team data).

Second, using RCM we regressed team performance simultaneously on team size, team type, leadership climate, team empowerment, and average levels of LMX, individual empowerment, and individual performance in teams. In both the full sample and the low-interdependent receiving team data, none of the predictors were statistically significant. However, in the high-interdependent freight team data, results indicated that both team empowerment ($\beta = .61$, $p < .05$) and average levels of individual performance in teams ($\beta = .29$, $p < .05$) uniquely and positively predicted team performance, whereas none of the other predictors were statistically significant. Also, in the full sample, team type again moderated the influence of team empowerment on team performance ($\beta = .70$, $p < .05$) but not the influence of average individual performance in teams on team performance ($\beta = .15$, ns). These results indicate that team empowerment and individual performance accounted for unique variance in team performance and that these relationships held more strongly in high-interdependent teams.

Finally, to test the possibility that common-source variance affected the relationship between leadership climate and team empowerment, we retested this relationship after obtaining leadership climate scores from half of the members within each team and team empowerment scores from the other half of members within each team. Using these split-sample data and after controlling for team size, leadership climate remained a significant predictor in the freight teams ($\beta = .36$, $p < .05$) but not in the receiving teams ($\beta = .11$, ns) or in the full sample ($\beta = .17$, ns). Thus, when separating out the sources from which leadership climate and team empowerment were collected, the conclusion that leadership climate significantly and positively related to team empowerment held in high- but not in low-interdependent teams.

Summary

In sum, results provided support for most hypotheses and the overall model in high-interdependent teams, but somewhat weaker support was obtained in low-interdependent teams. Differences across high- and low-interdependent teams were particularly pronounced for results involving individual and team performance. The results are summarized in Figure 4, where significant paths for each type of team are provided.

Discussion

Taken together, our findings lead us to draw several conclusions. First, we provide empirical evidence for the viability of an integrative multilevel model of leadership, empowerment, and performance in teams. Specifically, our findings offer a more detailed account of the multilevel mechanisms by which leader behaviors affect individual and team performance. Second, our results support and extend empowerment theory across the individual and team levels, as well as demonstrate the cross-level interplay between individual and team empowerment. Finally, our findings suggest that team interdependence potentially represents an important boundary condition affecting the meaning and function of empowerment across levels.

Theoretical Implications

Our first implication underscores the importance of taking a multilevel view of leadership, motivation, and performance in teams. Indeed, we detected several direct, indirect, and interactive cross-level relationships between team-level variables and individual empowerment and performance, beyond individual-level variables. One of the key findings of our study is that different aspects of leadership, namely LMX and leadership climate, were related to empowerment at the individual and team levels of analysis. Although leadership climate did not directly relate to individual empowerment, it did relate indirectly to individual empowerment (through team empowerment and LMX) and further positively moderated the LMX–individual empowerment relationship. This suggests that team leaders' efforts to empower their members
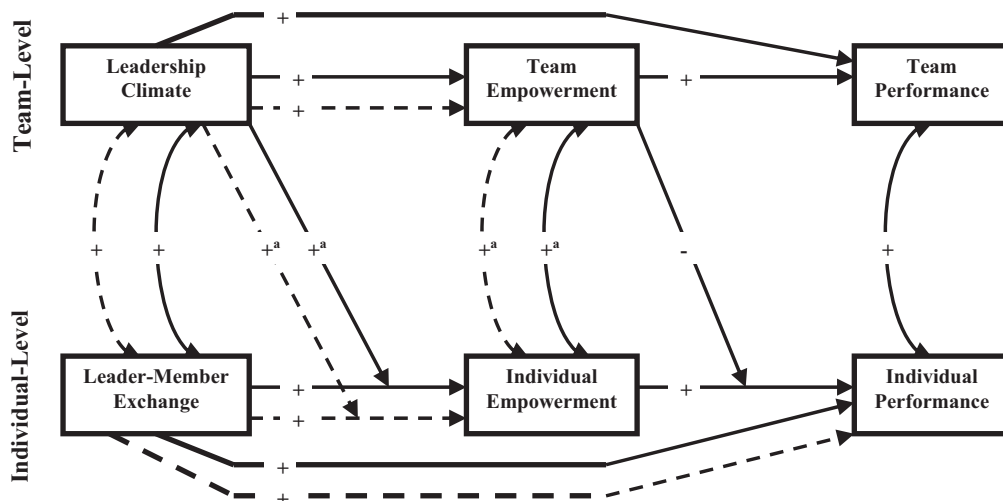

Figure 4. Summary of results. Solid arrows reflect paths supported in high-interdependent freight teams; dashed arrows reflect paths supported in low-interdependent receiving teams. [a] Path supported only in the full (combined) sample.

personally (particularly through developing personal relationships with members) are more likely to be effective when they also work at developing an empowering climate that encompasses the team as a whole. Of interest, these results held even after controlling for perceived organizational support, which suggests that team leaders play a major role in empowering employees beyond the positive impact of broader organizational support. Our results are in line with a recent theory of motivation in teams developed by Chen and Kanfer (2006), according to which ambient stimuli (e.g., leadership climate) and discretionary stimuli (e.g., LMX) differentially and synergistically influence individual and team motivational states, such as psychological empowerment. These results highlight the unique and complementary means by which team leaders can empower individual members and teams simultaneously.

The second implication is that our study helped generalize empowerment theory across levels of analysis. Although researchers have begun to examine the generalizability of empowerment models across levels of analysis (e.g., Kirkman & Rosen, 1999; Seibert et al., 2004), to our knowledge this is the first study to explicitly integrate models of individual and team empowerment. First, extending previous work, our findings indicate that empowerment positively relates to performance and helps explain relationships between leadership variables and performance *simultaneously* at both the individual and team levels. Second, the finding that individual and team empowerment are positively related is particularly encouraging, as it suggests that empowering teams does not come at the expense of empowering individuals, and vice versa. That is, there does not seem to be any inherent trade-off between empowering individuals and teams. Third, we found that high levels of team empowerment could compensate for low levels of individual empowerment. Thus, team empowerment can help reduce the need to empower each individual member in the team. Finally, the finding that individual empowerment positively predicted individual performance, which in turn aggregated to influence team performance (albeit only in high-interdependent teams) is promising, as it suggests that empowering individuals in teams can help facilitate team effectiveness beyond team empowerment. Because the bulk of empowerment research has been carried out at either the individual *or* the team level of analysis, our research breaks new ground by identifying the unique and complementary natures of both individual and team empowerment. An important implication of these findings is that researchers need to account for the influence of empowerment at both the individual and team levels to more fully explain variance in employee and team performance.

Finally, although it was a more exploratory aspect of this study, we found somewhat different results in freight and receiving teams, which suggests that team interdependence may serve as an important boundary condition for multilevel relationships involving leadership, empowerment, and performance (cf. Kozlowski & Bell, 2003). In particular, even though leadership related to empowerment similarly across levels irrespective of team interdependence, individual and team empowerment predicted performance (and helped link between leadership and performance) only in high-interdependent teams. Moreover, although not significantly moderated by team type, we found that in high-interdependent (but not in low-interdependent) teams, team empowerment moderated (negatively) the positive influence of individual empowerment on individual performance, and individual performance related posi-

tively to team performance. Although only a few results differed significantly across low- and high-interdependent teams when using team type as a moderator, it is important to keep in mind that dichotomous moderators are notoriously low on power (Aguinis, Beaty, Boik, & Pierce, 2005). Indeed, overall, the results—particularly those involving performance—were more supportive of the multilevel model of relationships in high-interdependent teams, which concurs with the notion that team interdependence is a critical boundary condition affecting the validity of team effectiveness theories and models (e.g., Gully, 2000). Nonetheless, inferences pertaining to differences in team interdependence were limited by the fact that we did not directly manipulate or measure team interdependence, and given there were potentially other differences associated with freight and receiving teams. We consider these issues more fully in the *Limitations and Research Directions* section below.

Practical Implications

Our study indicates that managers should use somewhat different strategies to empower individual team members and teams as a whole. To empower individual team members, team leaders should ensure they develop high levels of mutual trust and respect with their team members. To empower teams as a whole, team leaders should ensure they delegate enough autonomy and responsibility to all members in their team, involve the team in decision making, and encourage the team to self-manage its performance to the extent possible.

The cross-level relationship we detected between individual and team performance suggests further that an optimal level of team effectiveness can be achieved when managers empower members personally and collectively. Thus, team leaders should realize that the individuals within the team matter, and should pay attention to motivating and empowering both individual members and teams. However, our findings suggest that team leaders should first and foremost focus on empowering their teams, given that team empowerment can simultaneously enhance individual empowerment and performance and reduce the possible negative effects of low individual empowerment on performance in teams. The lesson here is that team leaders do not, at least according to our findings, have to manage tensions or trade-offs between motivating the individual team members and motivating teams as a whole. Motivating and empowering the team will not, as some have surmised (Kirkman & Rosen, 1999), drain individual empowerment and thus weaken individual or team performance. Thus, when it comes to empowerment in team-based organizations, more appears to be better.

Although tentative and in need of replication, our findings involving team interdependence also suggest that managers should lead employees who work in less interdependent teams differently than those working in more interdependent teams, a rather novel suggestion among the more general popular press books on team leadership (cf. Hackman, 2002). In particular, although developing an empowering leadership climate may affect individual empowerment similarly in interdependent and noninterdependent teams, such a climate is unlikely to facilitate team effectiveness in less interdependent teams. In contrast, when individuals perform more interdependent tasks, it is particularly important for managers to

empower both individuals and teams, given that empowerment enables and motivates them to perform well on such tasks.

Limitations and Research Directions

This study has several limitations, which highlight important avenues for future research. First, our operationalization of team interdependence was limited because we did not quantify differences in task interdependence and because there might have been other differences between the freight and receiving teams. Indeed, the freight and receiving teams differed on team size and member tenure in their positions. However, all else being equal, members of larger teams and those who worked together for shorter periods are *less* likely to share the same perceptions of team empowerment. Yet as expected, we still obtained higher intermember agreement in the larger freight teams whose members had smaller team tenure. Additionally, our analyses controlled for differences in both team size and members' tenure in their positions. Although there could be other factors on which the teams differed that we did not measure (e.g., they used different technology and equipment to accomplish their work), factors other than team interdependence are less likely to explain the difference in within-team agreement in perceptions of team empowerment. Furthermore, our interviews with numerous subject matter experts in the company helped confirm the distinct levels of interdependence in these teams, and our results were generally supportive of such a distinction. Thus, although more research is needed to replicate and confirm our findings, our initial results suggest that team interdependence can be an important boundary condition affecting the generalizability of multilevel models of leadership, empowerment, and performance.

In addition, the lower ICC values for team empowerment could explain the finding that team empowerment did not predict team performance in receiving teams. However, we argue that the low ICC values were *symptomatic* of low interdependence in these teams, which tends to lead to fewer interactions among members and hence lower consensus among members in their perceptions of team-related phenomena, such as team empowerment (Chen et al., 2004; Kozlowski & Klein, 2000). Moreover, even though ICC values were substantially higher for leadership climate and individual performance in receiving teams, these measures still did not predict team performance, consistent with the team interdependence explanation. At the individual level, smaller sample size is another potential alternative explanation for the different results obtained in receiving teams relative to freight teams. However, we still detected several significant results at the individual level in the receiving teams, and the key difference in results was that involving the mediating role of individual empowerment in the LMX–individual performance relationship. Thus, there are reasons to believe that team interdependence, and not other factors, explains the different results obtained in the freight and receiving teams.

Beyond team interdependence, two other design-related issues that need further investigation include the common-source variance inherent in the leadership–empowerment relationships and the cross-sectional nature of this study. The findings that LMX predicted individual empowerment over and above perceived organizational support and that leadership climate predicted team empowerment over and above average LMX in teams and when using the split-sample analyses in the freight teams suggest that the

leadership–empowerment relationships were not adversely affected by common-source variance. Still, our findings could be strengthened by using alternative methods and distinct sources for capturing the focal variables. Using different measurement approaches and sources is also important when examining relationships between similar (multilevel) constructs across levels (see Chen et al., 2004). Although we used different *measures* of empowerment and leadership at the individual and team levels, our findings would be strengthened by also relying on different *sources* to measure these constructs at different levels, as we did with our performance measures. Finally, the cross-sectional nature of this study precludes us from making causal inferences. Future experimental research would clearly help strengthen the inferences drawn from our study.

We also encourage researchers to expand the nomological network of empowerment by including additional predictors and outcomes. For instance, on the predictor side it would be interesting to more thoroughly compare the relative influences of individual differences (e.g., need for achievement, skills, or ability) and leadership practices on empowerment, which would allow for better integration of staffing and managerial strategies (Chen & Kanfer, 2006). Also, given that empowerment only partially mediated between leadership and performance in interdependent teams at each level, researchers should also expand our model by considering specific processes that could explain these relationships, such as planning and coordinated effort (Mathieu et al., 2006), or the quality of exchanges among team members (cf. Seers, 1989). Finally, although our initial findings are encouraging, they are based on a sample of service teams at low organizational levels. Thus, it is important to extend the generalizability of our findings to other kinds of teams and different organizational contexts, such as teams in high-tech and virtual organizations, where empowerment might be an even more important driver of performance (e.g., Chen & Klimoski, 2003; Kirkman et al., 2004).

Conclusion

Researchers and practitioners alike have debated the merits of empowerment programs in organizations. In contrast to the oft-heard team empowerment slogan "There is no *I* in teams," our research indicated that scholars and practitioners should not overlook individual members in empowered teams. Results of this study provide support for the usefulness of a multilevel conceptualization of these processes and show the criticality of such models for a full delineation of how leadership and empowerment influence performance in highly interdependent teams. Our findings should encourage future team researchers to include both individual- and team-level constructs in their models of team performance. It is only by explicitly considering both levels that researchers will begin to construct more complete and accurate pictures of team performance. In other words, there are always *I*s in teams.

References

Aguinis, H., Beaty, J. C., Boik, R. J., & Pierce, C. A. (2005). Effect size and power in assessing moderating effects of categorical variables using multiple regression: A 30-year review. *Journal of Applied Psychology, 90,* 94–107.

Bandura, A. (1997). *Self-efficacy: The exercise of control.* New York: Freeman.

Bandura, A., & Locke, E. A. (2003). Negative self-efficacy and goal effects revisited. *Journal of Applied Psychology, 88,* 87–99.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173–1182.

Bauer, T. N., & Green, S. G. (1996). Development of leader–member exchange: A longitudinal test. *Academy of Management Journal, 39,* 1538–1567.

Bliese, P. D. (2000). Within-group agreement, non-independence, and reliability: Implications for data aggregation and analyses. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 349–381). San Francisco: Jossey-Bass.

Bliese, P. D. (2002). Using multilevel random coefficient modeling in organizational research. In F. Drasgow & N. Schmitt (Eds.), *Advances in measurement and data analysis* (pp. 401–445). San Francisco: Jossey-Bass.

Chen, G. (2005). Newcomer adaptation in teams: Multilevel antecedents and outcomes. *Academy of Management Journal, 48,* 101–116.

Chen, G., & Bliese, P. D. (2002). The role of different levels of leadership in predicting self and collective efficacy: Evidence for discontinuity. *Journal of Applied Psychology, 87,* 549–556.

Chen, G., Bliese, P. D., & Mathieu, J. E. (2005). Conceptual framework and statistical procedures for delineating and testing multilevel theories of homology. *Organizational Research Methods, 8,* 375–409.

Chen, G., & Kanfer, R. (2006). Toward a systems theory of motivated behavior in work teams. *Research in Organizational Behavior, 27,* 223–267.

Chen, G., & Klimoski, R. J. (2003). The impact of expectations on newcomer performance in teams as mediated by work characteristics, social exchanges, and empowerment. *Academy of Management Journal, 46,* 591–607.

Chen, G., Mathieu, J. E., & Bliese, P. D. (2004). A framework for conducting multilevel construct validation. In F. J. Yammarino & F. Dansereau (Eds.), *Research in multilevel issues: Multilevel issues in organizational behavior and processes* (Vol. 3, pp. 273–303). Oxford, England: Elsevier.

Cohen, S. G., & Bailey, D. E. (1997). What makes teams work: Group effectiveness research from the shop floor to the executive suite. *Journal of Management, 23,* 239–290.

DeShon, R. P., Kozlowski, S. W. J., Schmidt, A. M., Milner, K. R., & Weichmann, D. (2004). A multiple goal, multilevel model of feedback effects on the regulation of individual and team performance in training. *Journal of Applied Psychology, 89,* 1035–1056.

Eisenberger, R., Cummings, J., Armeli, S., & Lynch, P. (1997). Perceived organizational support, discretionary treatment, and job satisfaction. *Journal of Applied Psychology, 82,* 812–820.

Gavin, M. B., & Hofmann, D. A. (2002). Using hierarchical linear modeling to investigate the moderating influence of leadership climate. *Leadership Quarterly, 13,* 15–33.

Gerstner, C. R., & Day, D. V. (1997). Meta-analytic review of leader–member exchange theory: Correlates and construct issues. *Journal of Applied Psychology, 82,* 827–844.

Gully, S. M. (2000). Work team research: Recent findings and future trends. In M. M. Beyerlein (Ed.), *Work teams: Past, present, and future* (pp. 25–44). Dordrecht, the Netherlands: Kluwer Academic.

Hackman, J. R. (1992). Group influences on individuals in organizations. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (Vol. 3, pp. 199–267). Palo Alto, CA: Consulting Psychologists Press.

Hackman, J. R. (2002). *Leading teams: Setting the stage for great performance.* Boston: Harvard Business School Press.

Hofmann, D. A., Morgeson, F. P., & Gerras, S. J. (2003). Climate as a moderator of the relationship between leader–member exchange and content specific citizenship: Safety climate as an exemplar. *Journal of Applied Psychology, 88,* 170–178.

Katz, D., & Kahn, R. L. (1978). *The social psychology of organizations.* New York: Wiley.

Kelly, J. R., & Barsade, S. G. (2001). Mood and emotions in small groups and work teams. *Organizational Behavior and Human Decision Processes, 86,* 99–130.

Kirkman, B. L., & Rosen, B. (1997). A model of work team empowerment. *Research in Organizational Change and Development, 10,* 131–167.

Kirkman, B. L., & Rosen, B. (1999). Beyond self-management: Antecedents and consequences of team empowerment. *Academy of Management Journal, 42,* 58–74.

Kirkman, B. L., Rosen, B., Tesluk, P. E., & Gibson, C. B. (2004). The impact of team empowerment on virtual team performance: The moderating role of face-to-face interaction. *Academy of Management Journal, 47,* 175–192.

Kirkman, B. L., Tesluk, P. E., & Rosen, B. (2001). Assessing the incremental validity of team consensus ratings over aggregation of individual-level data in predicting team effectiveness. *Personnel Psychology, 54,* 645–667.

Kozlowski, S. W. J., & Bell, B. S. (2003). Work groups and teams in organizations. In W. C. Borman, D. R. Ilgen, & R. J. Klimoski (Eds.), *Comprehensive handbook of psychology: Vol. 12. Industrial and organizational psychology* (pp. 333–375). New York: Wiley.

Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 3–90). San Francisco: Jossey-Bass.

Liden, R. C., Wayne, S. J., & Sparrow, R. T. (2000). An examination of the mediating role of psychological empowerment on the relations between the job, interpersonal relationships, and work outcomes. *Journal of Applied Psychology, 85,* 407–416.

Liden, R. C., Wayne, S. J., & Stilwell, D. (1993). A longitudinal study on the early development of leader–member exchanges. *Journal of Applied Psychology, 78,* 662–674.

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7,* 83–104.

Mathieu, J. E., Gilson, L. L., & Ruddy, T. R. (2006). Empowerment and team effectiveness: An empirical test of an integrated model. *Journal of Applied Psychology, 91,* 97–108.

McDaniel, M. A., Schmidt, F. L., & Hunter, J. E. (1988). Job experience correlates of job performance. *Journal of Applied Psychology, 73,* 327–330.

Mills, P. K., & Ungson, G. R. (2003). Reassessing the limits of structural empowerment: Organizational constitution and trust as controls. *Academy of Management Review, 28,* 143–153.

Morgeson, F. P., & Hofmann, D. A. (1999). The structure and function of collective constructs: Implications for multilevel research and theory development. *Academy of Management Review, 24,* 249–265.

Pinheiro, J. C., & Bates, D. M. (2000). *Mixed-effects models in S and S-PLUS.* New York: Springer-Verlag.

Ployhart, R. E. (2004). Organizational staffing: A multilevel review, synthesis, and model. *Research in Personnel and Human Resources Management, 23,* 123–179.

Podsakoff, P. M., MacKenzie, S. B., Lee, J., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88,* 879–903.

Saavedra, R., Earley, P. C., & Van Dyne, L. (1993). Complex interdependence in task-performing groups. *Journal of Applied Psychology, 78,* 61–72.

Scandura, T. A., & Graan, G. B. (1984). Moderating effects of initial leader–member exchange status on the effects of leadership intervention. *Journal of Applied Psychology, 69,* 428–436.

Schneider, B., Smith, D. B., & Sipe, W. P. (2000). Personnel selection psychology: Multilevel considerations. In K. J. Klein & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 91–120). San Francisco: Jossey-Bass.

Seers, A. (1989). Team-member exchange quality: A new construct for role-making research. *Organizational Behavior and Human Decision Processes, 43,* 118–135.

Seibert, S. E., Silver, S. R., & Randolph, W. A. (2004). Taking empowerment to the next level: A multiple-level model of empowerment, performance, and satisfaction. *Academy of Management Journal, 47,* 332–349.

Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. In S. Leinhardt (Ed.), *Sociological methodology* (pp. 290–312). Washington, DC: American Sociological Association.

Spreitzer, G. M. (1995). Psychological empowerment in the workplace: Dimensions, measurement, and validation. *Academy of Management Journal, 38,* 1442–1465.

Thomas, K. W., & Velthouse, B. A. (1990). Cognitive elements of empowerment: An "interpretive" model of intrinsic task motivation. *Academy of Management Review, 15,* 666–681.

Welbourne, T. M., Johnson, D. E., & Erez, A. (1998). The role-based performance scale: Validity analysis of a theory-based measure. *Academy of Management Journal, 41,* 540–555.

Zohar, D. (2000). A group-level model of safety climate: Testing the effect of group climate on microaccidents in manufacturing jobs. *Journal of Applied Psychology, 85,* 587–596.