

A MULTI-LEVEL PERSPECTIVE ON LEADING FOR CREATIVITY

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ABSTRACT

This study examined creativity leadership from individual- and group-level perspectives using two employee samples. The feasibility of an emergent, collective group-level form of creativity leadership characterized by concertive and conjoint group member actions catalyzed by individual leadership was explored, and its effects on creative performance both within and between groups were tested. Results suggest that a construct of creativity leadership can be operationalized at both the individual and group levels, and that groups with higher levels of collective creativity leadership have higher levels of creative performance, beyond the effects of individual creativity leadership. Collective creativity leadership also interacted with individual creativity leadership across levels to affect individual creativity for group members. High levels of collective creativity leadership in a group enhanced the effects of individual creativity leadership for employees receiving high levels of leadership from supervisors, but for groups with low collective creativity leadership, individual creativity leadership made little difference.

A MULTI-LEVEL PERSPECTIVE ON LEADING FOR CREATIVITY

The notion of ‘leadership as an instrument’ (Bass, 1990) has been explored by researchers attempting to more fully understand how the work context can shape the creative behavior of employees. Examination of this growing body of creativity research reveals a focus on the role of leadership in terms of the work group supervisor (e.g., George & Zhou, 2001; Oldham & Cummings, 1996; Madjar, Oldham, & Pratt, 2002; Scott & Bruce, 1994). However, in discussions of the social dynamics conducive to creativity within work groups, both supervisors and work group peers are seen as influential for creative action and outcomes (Mumford & Gustafson, 1988; Shalley & Gilson, 2004; Shalley, Zhou & Oldham, 2004).

The presiding research assumes that individual supervisors are responsible for shaping the creative action of employees in their work group, but due to its complexity and magnitude, leading for creativity may require action at multiple levels (Mumford, Scott, Gaddis, & Strange, 2002) that extend beyond the supervisor. A small set of studies has begun to explore the processes and factors within work groups that may facilitate creative performance at both the team (e.g., Gilson & Shalley, 2004; Anderson & West, 1998) and individual employee level (e.g., Pirola-Merlo & Mann, 2004; Taggar, 2002). Although distribution of certain forms of leadership to the team level has been explored (e.g., transformational leadership), leadership for creativity from a multilevel perspective has not been addressed. Studies examining leadership-creativity associations have tended to take place ‘in level,’ investigating the influence of individually-directed leadership on employee creativity (e.g., Oldham & Cummings, 1996; Madjar, et al., 2002; Scott & Bruce, 1994; Shin & Zhou, 2003; Tierney, Farmer & Graen, 1999; Tierney & Farmer, 2002, 2004; Zhou, 2003) or of group level leadership on group creative outcomes (e.g., Kahai, Sosik & Avolio, 1997, 2003). No studies have explored possible cross-

level effects in this regard.

In response, the goal of the current research is to take a multilevel perspective on leading for creativity that explores how leadership by an individual supervisor may manifest in a collective form of creativity leadership at the work group level. Adopting such a multilevel approach is instrumental in uncovering possible contextual effects and emergent relationships (Bliese, 2000) that may be inherent in the dynamics surrounding creativity leadership, but have previously gone undetected. By considering creativity leadership from an individual and collective perspective, the current research may also provide a more complex view into the pervasive nature of leaders' influence on creativity. In addition, it may also offer a conceptual bridge between research examining the influence of leaders on individual creativity and that examining how group phenomena shape team creativity. Although these two productive research streams have advanced in a parallel fashion, there currently is no recognition of how leadership for individual creativity may translate into group-level phenomena linked to creative performance.

THE LEVELS AND EFFECT OF CREATIVITY LEADERSHIP

The Effect of Creativity Leadership at the Individual Level

As discussed earlier, research suggests an association between the leadership on the part of supervisors and the creative productivity of their employees. The nature of this leadership has taken place in terms of a number of elements such as relational and task support (Amabile, Schatzel, Moneta, & Kramer, 2004; Amabile, Conti, Coon, Lazenby & Herron, 1996; Majdar et al., 2002; Oldham & Cummings, 1996; Tierney et al., 1999), provision of autonomy (e.g., Amabile et al., 2004; Oldham & Cummings, 1996), confidence enhancement (Redmond, Mumford & Teach, 1993; Tierney et al., 2004), role modeling (Tierney, et al., 2004),

encouraging creativity via expectations (Scott & Bruce, 1996) and rewards (Baer, Oldham & Cummings, 2003) and facilitating communication and collaboration (Farris, 1988). As such, and as a pre-requisite to our subsequent discussion of multi-level creativity leadership, we first anticipate that leadership at the supervisor level will relate to the creative performance of employees in the work place.

H1: Leadership at the supervisor level will have a positive, significant association with employee creativity.

Creativity Leadership at Multiple Levels

The importance of taking a multilevel perspective of leadership has been acknowledged, with Avolio and Bass (1995: 200) noting that the “evolution of leadership constructs to higher levels of analysis” needs to be addressed in order to reach an accurate portrayal of leadership and its effects (Hunt & Ropo, 1995). Per creativity research, recent conceptual models (Amabile, 1988; Ford, 1996; Woodman, Sawyer, & Griffin, 1993) have explicitly taken account of the multilevel nature of the forces that shape creativity. The work by Drazin, Glynn, and Kazanjian (1999) is of particular import in this regard for its explicit emphasis on the specification of theory underlying the multilevel nature of the creative process. We have suggested that actions such as autonomy granting, efficacy building, collaboration encouragement, role modeling, task support, and creativity encouragement are creativity-conducive actions that supervisors target to individual employees. However, Kozlowski and Klein (2000) cite that it is common for organizational phenomena that reside at lower levels to demonstrate a “bottom-up process” in which their properties eventually emerge at a higher level. They further note that when this emerging dynamic occurs, the higher level form of the phenomenon is considered to be “unique and holistic” and not reducible to a simple state of its lower-level elements. Kozlowski and

Klein (2000) identify leadership as one construct whose enactment at lower levels is likely to result in a form of emergence at higher levels. To the extent that work group supervisors appear to play an integral role in the transformation of individual creativity to team creativity (Taggar, 2002), exploration as to how, and if, leadership by an individual supervisor may prompt the group's engagement in a collective form of leadership for creativity seems warranted.

To develop an adequate definition and understanding of a collective creativity leadership construct, it is necessary to specify the form the construct might assume as well as the structure of its emergence (Kozlowski & Klein, 2000). Although we maintain that the basic creativity-conducive behavioral elements supervisors depict are still integral to the more collective leadership form, we suggest that at the group level, creativity leadership is a “fuzzy representation” (Bliese, 2000) of its lower form. In this sense, creativity leadership is functionally equivalent at the individual and group level in terms of the role that it plays, yet it is not completely isomorphic in structure across the two levels. Kozlowski and Klein (2000) refer to this as a pooled emergence form of construct whereby the collective form of creativity leadership retains a nomological link (Bliese, 2000) to the individual form but differentiates in a number of ways. This group-level construct does not represent shared perceptions of the supervisor’s creativity leadership, but instead characterizes various creative leadership resources (e.g., autonomy, role modeling) available to the group beyond those provided by a supervisor’s creative leadership to an individual group member. Collective-level creativity leadership emerges as contextual influences are infused into the construct elements of the lower level through a variety of within-group social mechanisms (Kozlowski & Klein, 2000) that are not part of, or immediately salient to, individual creativity leadership.

Our key consideration is that demonstrations of leadership toward individual employees

do not take place in a social vacuum. In the process of supervisors influencing a single employee with whom they interact, it is likely that a chain of subsequent reactions will take place as these employees are exposed to other employees within the group. As creativity leadership plays out among individual team members, the overall exposure to creativity leadership is enhanced over time and events and the leadership form may become embedded at a more collective level as a result of what Gronn (2002) refers to as subsequent “concertive” action among team members. He notes that the practice of leadership becomes “stretched over” situational contexts in terms of the conjoint behaviors of a team’s members. As it develops, concertive action is characterized by a process of within-group institutionalization involving “intuitive understandings” of shared roles and acceptable practices, pooling of skills and expertise to solve problems, a sense of collaborative engagement, and “conjoint agency” (Gronn, 2002). Such a pattern reflects accumulated reciprocal influence episodes within the group resulting in synergies beyond individual action. This representation positions the team’s leader as a catalyst for collective creativity leadership by providing team members with the foundation for what Taggar (2002: 315) called “team creativity-relevant processes.” Thus, we view collective creativity leadership as a pattern of creativity-supportive behavioral influence initiated by the leader toward individual members, and ultimately evidenced at the team level through member exposure, observation, and subsequent interaction.

For example, when leaders provide individual employees with resources and other forms of task support, task skills and abilities are enhanced, enabling them to facilitate these attributes in team members and thereby providing them a stronger task foundation on which to build creative efforts. Also, as leaders attempt to enhance the self-efficacy of individual employees, it is likely that elevated efficacy levels will occur in other group members who observe or interact

with efficacious individuals (Bandura, 1986) as team members elicit “latent capacities and possibilities” among team members (Gronn, 2002: 431). Leader acts of creative role modeling could also elicit conjoint agency among team members. If individual employees who have become more proficient as a result of following cues from their leader serve as models for their team members they may illustrate how creativity can be accomplished within the confines of their work role (Shalley & Gilson, 2004; Shalley et al., 2004).

Through work interactions, employees observe the actions and experiences of team members and form conclusions regarding the implications of these for them (James & Cropanzano, 1990). For instance, as leaders provide operational autonomy to employees over time, there may emerge an intuitive understanding among team members regarding the level of flexibility and discretion employees should undertake in their work roles, constituting a shared mental model for creative action (Mumford et al., 2002). The same mechanism fostering concertive action may be present when leaders direct individual employees toward creativity and serve as creativity role models. As a leader demonstrates creative action or encourages an employee to set and pursue creativity goals, other employees witness these processes (or infer them from social communications) and may conclude that they are legitimate actions within the team. Therefore, leaders demonstrating novel task approaches for an employee or communicating creativity expectations for an employee’s work may trigger a sequence in which members come to collectively understand creativity as a form of anticipated behavioral practice within the team.

Finally, by encouraging individual employees to share ideas and information with their peers, leaders are initiating a practice that is likely to trigger reciprocation among the team members and may eventually result in a collective form of collaborative practice normatively

institutionalized within the team. Considering the preceding points, we propose:

H2: There is a collective form of creativity leadership that exists at the work group level.

A recognized multilevel model of creativity (Woodman et al., 1993) acknowledges leadership as a contextual influence that is likely to shape creativity within the entire group, and empirical research has found that creativity is highest in groups when a creativity-relevant set of synergistic processes take place (Pirola-Merlo & Mann, 2004; Taggar, 2002). Whereas we expect individual creative leadership to positively impact individual creativity, we expect collective creativity leadership to operate in a parallel fashion at the group level, increasing overall creativity within the group. For example, the leader's influence on the creative efficacy of individual employees would emerge at the group level in terms of an overall sense of creative efficacy building within the group. With this enhanced efficacy building, we would anticipate an increase in positive affect and motivation for creative efforts (Amabile, 1988) amplified throughout the group through concertive processes, resulting in higher overall levels of creative performance.

Another example would be in regards to the degree of collaboration that leaders promote among individual employees. As the level of collaborative interacts increases in the team, more sources of creative ideas and constructive feedback will be available to the team members pursuant to their creative performance (Gilson & Shalley, 2004). A final example would be when leaders set creative direction for individual employees by encouraging them to direct efforts toward creative work and set creativity goals. Because these activities playing out in the team may result in a shared understanding of the appropriateness of creative work, we anticipate that the shared sense and institutionalization of normative expectations for creativity would result in higher overall levels of creative performance than in teams low in collective creativity

leadership.

H3: Collective creativity leadership will have a positive, significant association with mean creativity level within the team, after controlling for the individual form of creativity leadership.

In addition to the creativity effect at individual and team levels, we expect that cross level effects might be present as well. Taggar (2002) noted that although creativity-conducive factors at the individual level provide the foundation for creative action, team processes will influence the manner in which these individual factors relate to team creativity. In a similar fashion, we propose that the presence or absence of collective creativity leadership will augment or detract from the positive influence individual creativity leadership may have on the employee's resulting creative performance. When employees receive creativity leadership directly from the leader, they should experience an initial level of capacity and motivation to create as well as a sense that creativity is valued. When creativity leadership becomes a collective practice within the team, the employee is presented with additional sources of capacity-building, motivational enhancement, and sensemaking reinforcement and creativity levels should be increased.

With no concertive action on leading for creativity at the team level, the degree of leadership the employee experiences is limited to that proffered by the supervisor directly, leaving the employee to operate in the absence of supportive contextual factors such as team normative expectations, conjoint agency, and collaborative practices that should reinforce creative attempts. The effect of a lack of collective creativity leadership may go beyond a missed opportunity for additional creativity support to create a situation in which groups without the collective form of leadership may actually diminish or thwart the positive influence of creativity leadership at the individual level.

The opposing scenario would be when creativity leadership is present at the team level but not provided by a leader to a particular employee. On one hand, although the more collective form of leadership might compensate for the lack of individual creativity leadership, we believe that the absence of any direct encouragement and support from the immediate supervisor will negatively offset the collective support from the team. In the final scenario where employees are faced with a barren situation in which their work experience is void of creativity leadership from any source, we would expect low levels of creativity to be evidenced.

H4: Collective creativity leadership will moderate the creativity leadership- employee creativity association such that it will be stronger when collective creativity leadership is stronger and weaker when collective creativity leadership is weaker.

METHOD

Samples, Settings, and Procedures

Two samples were used in hypothesis testing with employees providing information on creativity leadership and several control variables. The first (Sample 1) was 233 employees from the marketing, sales, operations, human resources, and design departments of a mid-sized consumer products company. Respondents were 61.4% male, had been with the company an average of 14.6 years (SD = 8.3 years), and had an average 5.29 years (SD = 1.8) of college. The second sample (Sample 2) consisted of research managers, scientists, project leaders, and technicians from a large chemical company. The sample was 70% male, had an average corporate tenure of 11.4 years (SD = 10.45), averaged 4.95 years of college (SD = 2.73), and was part of a larger study on work innovation. Data were collected on-site in both settings with the first author present to answer questions and collect completed surveys. Respondents in both samples were part of intact work teams whose members interacted on a regular basis. After

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accounting for missing data for matched employee-supervisor pairs, Sample 1 consisted of 155 individuals from 28 work teams with average size of 5.5 and Sample 2 consisted of 138 individuals from 28 teams with an average size of 4.9 members.

Measures

Creativity leadership at the supervisor level was assessed by 23-items (Sample 1, $\alpha = .93$; 2, $\alpha = .94$) developed from Tierney and Farmer (2002), using a 6-point Likert scale (1 = never, 6 = always) and framed for “immediate supervisor or manager” that tapped the various dimensions of creativity leadership discussed above. Collective creativity leadership was tapped by taking the average of the individual leadership scores within each work team, consistent with the aggregation rule for a pooled emergence or fuzzy composition construct (Bliese, 2000; Kozlowski & Klein, 2000), wherein member contributions to the overall construct may vary considerably even though the group product is represented by its mean on individual creative leadership scores (Bliese, 2000; Kozlowski & Klein, 2000). Creative performance was assessed in both samples by the employees’ supervisors with seven items from Tierney et al. (1999) (Sample 1, $\alpha = .94$; Sample 2, $\alpha = .95$). Employee cognitive style (cf. Tierney et al., 1999), creative self-efficacy (Tierney & Farmer, 2002), and job complexity (cf. Madjar et al., 2002) have demonstrated associations with creative performance so they were considered in conjunction with the leadership variable as controls. Cognitive style was assessed with the Kirton Adaption-Innovation Inventory (Kirton, 1976) (Sample 1, $\alpha = .87$; Sample 2, $\alpha = .86$), creative self-efficacy was tapped with 3 items (Tierney & Farmer, 2002) (Sample 1, $\alpha = .83$; Sample 2, $\alpha = .76$), and job complexity was assessed with substantive complexity scores (Dictionary of Occupational Titles, Roos & Treiman 1980).

RESULTS

Descriptive statistics for the individual level variables (including controls) are reported in Table 1. As shown, employee creativity was significantly and positively related to individual creativity leadership and the three control variables in both samples. Hypotheses were tested using hierarchical linear modeling (HLM; Bryk & Raudenbush, 1992), given its appropriateness for multilevel analysis.

Insert Table 1 about here

As a pre-condition for such analysis (Bryk & Raudenbush, 1992), a null model was assessed in HLM to partition the variance of the creativity dependent variable into within and between components. The ICC(1) values indicated that 19% of the variance in creativity in Sample 1 ($\chi^2= 66.95, p < .001$) and 35% of the variance in creativity in Sample 2 ($\chi^2 =68.13, p < .001$) was between groups.

To test Hypothesis 1 (individual creativity leadership positively relates to employee creativity), a random coefficient regression model was generated regressing creativity on grand-mean centered creativity leadership and the control variables within groups (tabled results available from the authors). Both creative self-efficacy and job complexity controls were significant ($p < .05$) for Sample 1, and job complexity was significant in predicting creativity in Sample 2. Creativity leadership was significantly and positively related to employee creativity in both samples (Sample 1 $\gamma = .23, p < .03$; Sample 2 $\gamma = .31, p < .01$) supporting Hypothesis 1. Pseudo R^2 (Bryk & Raudenbush, 1992) indicated that individual creativity leadership explained 10% of the variance in creativity in Sample 1 and 9% of the variance in Sample 2.

Hypothesis 2 (the viability of a team-level collective creative leadership construct) was

gauged by a form of intraclass correlation known as ICC(2). As discussed earlier, this group variable is at best only partly isomorphic in meaning with its individual level counterpart, and does not represent shared perceptions but instead the extent to which creative leadership resources are available within the group as a whole. In this case, estimation of the reliability of group means through ICC(2) values (Bryk & Raudenbush, 1992; Snijders & Bosker, 1999) is much more important to detecting emergent relationships (Bliese, 2000) than showing within-group agreement or even showing a large proportion of variance at the group level (through ICC(1) values), since with strong group mean reliability values, even small levels of group variance may allow detection of strong aggregate relationships (Bliese, 2000). The ICC(2) values of .76 for Sample 1 and .89 for Sample 2 on creativity leadership indicate that group mean values differ reliably for this construct (Bliese, Halverson, & Schriesheim, 2002) providing support for the proposed group-level form of creativity leadership.

Hypothesis 3 (a positive effect of collective creative leadership on group-level creativity after controlling for individual creative leadership) is tested by using an intercepts-as-outcomes model (Snijders & Bosker, 1999) in which intercepts obtained from a group-mean centered within-group regression (Level 1) analysis are used to assess the effect of collective creativity leadership on between-group creativity. Significant variance existed in intercepts for creativity leadership across groups (Sample 1 $\chi^2 = .27.08$, $p < .01$; Sample 2 $\chi^2 = 31.90$, $p < .05$). The aggregated creative leadership variable was added to the within-groups random regression model as a Level 2 (between group) predictor (see Table 2). At Level 1, individual creativity leadership was marginally significant in Sample 1 ($p = .07$) and significant in Sample 2 ($p < .02$). At the group level (Level 2), collective creativity leadership significantly associated with creativity in both samples, supporting Hypothesis 3. We then used a multiparameter contrast test which

would indicate a context effect if the regression coefficients of individual creativity leadership and collective creativity leadership on creativity significantly differ (Raudenbush, 1989).

Significant results in both samples (Sample 1 $\chi^2 = 8.81$, $p < .01$; Sample 2 $\chi^2 = 10.22$, $p < .01$), indicate that collective creativity leadership had a significant and positive effect on group-level creativity beyond any effects of individual creativity leadership. Collective creativity leadership accounted for 20% of the between-group variance in team creativity in Sample 1 and 33% of the between-group variance in Sample 2.

Insert Table 2 about here

Hypothesis 4 (the cross-level interaction effect) was tested with a slopes-as-outcomes model, using slopes obtained from Level 1 analysis. Variance in slopes of the leadership-creativity relationship across the groups was not significant, but because we had strong *a priori* theoretical reasons to test for the cross-level effect, we proceeded to test the interaction. If the interaction effect was significant, we could infer low power as the cause of the nonsignificant slope test (Snijders & Bosker, 1999). Table 2 shows that the interaction effect was marginally significant in Sample 1 ($p < .07$) and significant in Sample 2 ($p < .02$), accounting for 22% of the variance in the relationship between creativity leadership and employee creativity respectively. As predicted (see Figures 1 and 2), the relationship between individual creativity leadership and creativity became stronger as collective creativity leadership increased. The highest levels of employee creativity occurred for high levels of individual creativity leadership in a team with a strong collective creativity leadership. Collective leadership had little effect on creativity when individual creativity leadership was low. For teams with low collective leadership, individual

creativity leadership made little difference in creativity, with the slope of that relationship near zero in both samples. These results support the prediction that high levels of collective creativity leadership enhance the effects of individual creativity leadership for employees receiving high levels of leadership from supervisors.

Insert Figures 1 and 2 about here

DISCUSSION

Consistent with previous research, our results show individual creativity leadership accounting for significant amounts of variance in employee creativity in two diverse field settings. We also examined the possible multilevel operation of creativity leadership. Building from the premise that an individual form of leadership by supervisors may manifest or emerge in a more collective form at the team level (Kozlowski & Klein, 2000), we tested for possible effects of collective creativity leadership within work groups. Our results provide support that such a leadership form was tenable, and appeared to enhance group-level creativity in both of the field settings we examined. In addition, results suggest that collective creativity leadership has a moderating impact on the association between individual creativity leadership and individual employee creativity. Individual creativity was relatively unaffected by the presence of either form of creative leadership alone. Instead, the pattern of results suggests that in order for employee creativity to be evidenced, the employee must not only be the direct recipient of creativity-relevant leadership attention, but must also work within a group where creativity leadership is manifest in a collective form as well.

In our attempts to define and specify the emergence of collective creativity leadership, it

is important that we differentiate it from other creativity-relevant contextual factors such as creativity climate (e.g., Amabile et al., 1996; Anderson & West, 1998). Consistent with generally accepted views on leadership, we define creativity leadership as a behavioral influence process. At the collective level, creativity leadership represents the concertive action and influence among group members related to leading for creativity. Conversely, climate perceptions reflect a cognitive judgment. At the collective level, a climate exists only through shared perceptions, and so reflects an isomorphic composition model requiring within-group agreement (see Kozlowski & Klein, 2000). This specification contrasts with the nature of collective creativity leadership as a fuzzy compositional construct for which within-group agreement may not be evidenced and is not integral for how the construct manifests (Bliese, 2000). Although perceptions of creativity leadership may be shared within a group, it is not the shared perceptions themselves that are implicated in collective creativity leadership.

The complex and perhaps idiosyncratic nature of creativity requires a leadership approach specific to its disposition modeled at multiple levels and in multiple contexts (Mumford & Licuanan, 2004), as we have tried to do here. As such, the current research should have a number of implications for theory and practice. The detection of a form of creativity leadership at the group level is of theoretical import. No study, to date, has explicitly considered the notion that leading for creativity may be initiated by the individual supervisor but eventually transpire at a level of co-worker interaction. Our results suggest that in their quest to influence individual employees toward creative action, leaders may serve as a catalyst for a variant form of concertive leadership for creativity operating at the collective group level. Although we did not measure these group processes directly, the conceptual linkage between leader behaviors and group processes has been well established (Hackman, 2002). Our findings imply a manner by

which supervisors may move both individuals and teams toward creativity, suggestive of a more pervasive impact of leadership on creativity in the work place than has previously been detected.

The nature and levels of leadership we detected may also represent a logical starting point for integrating research addressing leading for creativity and that concerned with team dynamics conducive to team creativity. Given that both supervisors and co-workers are proximal work factors with the potential to shape creative performance (Shalley, Gilson & Blum, 2000; Shalley & Gilson, 2004; Shalley, et al., 2004), it is naïve to assume that they will have separate and independent effects. As our research suggests, a more realistic assumption for researchers is that when creativity is present in work groups, it is likely a product of some form of complex confluence between the supervisor's impact and that of the employee's work group. However, only a few studies to date (e.g., George & Zhou, 2001; Madjar et al., 2003; Zhou, 2003) have simultaneously considered the role of supervisor and co-workers in terms of individual employee creativity. In addition, the current research also augments the body of studies concerned with the ways in which social forces shape creative action in the work place (e.g., Madjar et al., 2003; Shalley & Perry-Smith, 2001; Perry-Smith, 2005). Not only do we consider two sources of social influence, but we also examine one important way in which the social actions of the supervisor may trigger a series of social actions among co-workers conducive to both individual employee and group-level creativity.

From a practical perspective, our findings indicate that in addition to priming and supporting supervisors in the areas of creativity leadership, organizations need to acknowledge the potential impact of co-workers in this regard as well. The cross-level results are particularly revealing insofar as the only circumstance in which high levels of individual creativity occurred was when it was supported by leadership from the entire local work context—supervisor and

group members. As such, they should attend to means of facilitating the conjoint and concertive activity in work groups that comprise the collective form of creativity leadership also requisite for creative performance. Our results suggest that by limiting organizational support and encouragement of creativity leadership to only work group supervisors, organizations may be overlooking a critical element in the equation for employee creativity.

Research Limitations and Future Research

A number of limitations in this current research should be noted. Because each of our data collections took place using a cross-sectional design, we cannot make conclusive causal inferences regarding the association between creativity leadership and the creativity outcomes we examined. Our theoretical rationale suggests that a collective leadership form is a function of emergent processes initiated at the individual level (see Kozlowski & Klein, 2000), but it is also possible that a pre-existing state of concertive leadership at the group level shapes the leadership response of supervisors. Future longitudinal work is needed to delineate the directional flow of creativity leadership within groups.

Second, a response bias is also possible among our data in the sense that the supervisors in our study who engaged in high levels of leadership with certain employees might also tend to rate those individuals as more creative. This bias possibility is a ‘main effect’ issue and could account for the effects on between-group variance in creativity, but should not affect the cross-level results we detected. Consistent with research indicating that group creativity may be a fuzzy-composition construct represented by aggregated individual creativity (Pirola-Merlo & Mann, 2004), we assessed group-level creativity by averaging group member creativity. In future work, it would be useful to also assess group creativity leadership as a global construct measured at the group level.

Another interesting question that we did not attend to in the current research concerns the conditions under which individual creativity leadership evolves, or fails to evolve, into a collective form of creativity leadership. We relied on conceptual work to suggest the processes by which leadership directed at individual employees translates into concertive group action and processes conducive to creativity, but we did not explicitly test for these processes. It could be argued that the positive effects of the collective leadership variable simply reflect increased levels of creativity leadership provided to individuals—that our results, to some extent, are the result of an ecological fallacy. However, the multilevel analytic technique we used (HLM) allowed us, within each group, to account for the level of creative leadership provided by the supervisor to each individual, and the reported effects of collective creativity leadership were present beyond those individual effects. The exact manner in which this leadership emergence takes place needs to be explored. Finally, we also limited our examination to the individual and work group level. Leadership at all levels of the organization plays a role for creativity (Kanter, 1988), so the next logical step would be to examine if creativity leadership initiated at the supervisor level would emerge at higher levels as well, and if so, the form it might take.

Although a research stream has developed suggesting that leaders play a key role in fostering employee creativity, the relevance of leaders, coworkers and employee operating in a socially embedded group context for creativity has received little attention. The current work represents an initial examination of the importance of this social context to leadership's effects on creativity. In this regard, our work suggests the importance of research and practice assuming a more holistic and intricate consideration of how leadership can affect creative work outcomes.

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TABLE 1
Means, Standard Deviation, and Intercorrelations of Variables

	<u>Mean</u>	<u>SD</u>	1	2	3	4
Sample 1^a						
1. Creativity ratings	3.55	1.01				
2. Creativity leadership	4.10	0.83	.25**			
3. Cognitive style	3.48	0.42	.23**	-.02		
4. Creative self-efficacy	5.38	0.89	.31**	.08	.47**	
5. Job complexity	6.81	1.05	.27**	.09	.15	.22**
Sample 2^b						
1. Creativity ratings	3.49	1.10				
2. Creativity leadership	3.56	0.93	.34**			
3. Cognitive style	3.50	0.41	.29**	.16		
4. Creative self-efficacy	4.93	0.69	.27**	.06	.34**	
5. Job complexity	7.27	1.62	.26**	.07	.28**	.06

Note. ^a n after listwise deletion = 155, ^b n = 138; * $p < .05$, ** $p < .01$

TABLE 2
Hierarchical Linear Modeling Analyses for Employee Creativity^a

Sample Two: Consumer Products	Sample Five: R&D	
γ	γ	
H3 Intercepts-as Outcomes Model:		
Level 1: Individual variables		
Cognitive style	.34 [†]	.30
Creative self-efficacy	.16	.22
Job complexity	.15**	.12*
Creativity leadership	.17 [†]	.29*
Level 2: Group variables		
Collective creativity leadership	.53*	.44**
R^2 (between group variance only)	.20	.33
H4 Slopes-as Outcomes Model:		
Level 1: Individual variables		
Cognitive style	.32 [†]	.26
Creative self-efficacy	.17 [†]	.22
Job complexity	.14**	.12*
Creativity leadership	.20*	.31**
R^2		
Level 2: Group variables		
Collective creativity leadership	.53*	.39*
Collective creativity leadership X Individual creativity leadership	.45 [†]	.40*
R^2	.22	.39

^a Numbers provided are gamma coefficients

[†] $p < .10$ * $p < .05$; ** $p < .01$; *** $p < .001$

Figure 1
Interaction of Collective Creativity Leadership and Individual Creativity Leadership on Creativity for Consumer Products Sample

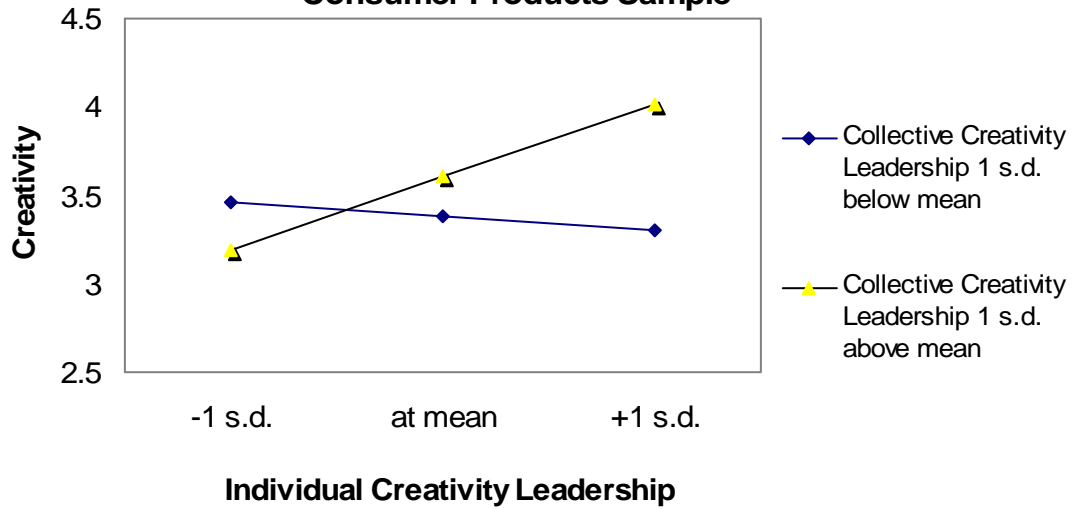


Figure 2
Interaction of Collective Creativity Leadership and Individual Creativity Leadership on Creativity for R&D Sample

