THE RIDDLE OF HETERARCHY: POWER TRANSITIONS IN CROSS-FUNCTIONAL TEAMS

FEDERICO AIME
Spears School of Business, Oklahoma State University

STEPHEN HUMPHREY
Smeal College of Business, Pennsylvania State University

D. SCOTT DERUE
Stephen M. Ross School of Business, University of Michigan

JEFFREY B. PAUL
Collins College of Business, University of Tulsa

In this paper, we develop the concept of a power heterarchy, which is a conceptualization of power structures in groups that is more dynamic and fluid than traditional hierarchical structures. Through a study of 516 directional dyads in 45 teams, we demonstrate that heterarchical structures in which the expression of power actively shifts among team members to align team member capabilities with dynamic situational demands can enhance team creativity. Our results indicate that this positive effect of power heterarchies on team creativity is contingent on the team perceiving the shifts in interpersonal power expressions as legitimate. We discuss the implications of this heterarchical power structure for research on group functioning, power, and legitimacy in organizations.

If we casually observe a cross-functional team at work, we see that power relationships within a team shift over time according to their relevance to the task. As "Cindy," a member of a project development IT team in a university, said in one of our interviews: "[In this team], I am a ten at four and a four at ten . . . depending on what [the project] needs in order to achieve its goals at that time . . . sometimes I am in charge, sometimes I am clearly not." Cindy's experience of repeated shifts of power within her team is a common occurrence in today's workplace, yet her description of dynamic power relations is directly at odds with the usual

treatment of power as a relatively stable hierarchical structure within groups.

Power in groups is traditionally conceptualized in reference to a rank ordering of individuals based on some valued social criteria (Blau & Scott, 1962; Emerson, 1962; Weber, 1946), under which group members are more or less powerful based on the relative value of resources such as formal authority, expertise, and access to information. Organizational scholars generally presume that these power hierarchies are relatively stable (Hardy & Clegg, 2006; Magee & Galinsky, 2008; Pfeffer, 1981), and that minor changes in power occur only over long periods of time or in the presence of a drastic increase in uncertainty (Barley, 1986; Tushman & Anderson, 1986). In the current literature, the prevailing wisdom is that stable power hierarchies promote more effective groups by providing order that helps to facilitate collective decision making, to motivate members, and to improve coordination and cooperation (Anderson & Brown, 2010; Halevy, Chou, & Galinsky, 2011; Magee & Galinsky, 2008). Indeed, O'Toole, Galbraith, and Lawler (2003) suggest that instability in power relations can promote role ambiguity and conflict, or, as Locke (Pearce, Conger, &

Locke, 2008: 284) describes, "organizational chaos and anarchy."

In contrast, the literature on shared leadership and self-management in work teams offers a different perspective on team functioning that suggests that hierarchical authority is not the only power structure in teams. Theories of shared leadership assume implicitly that individuals share responsibilities (specifically, leadership) within the team (Carson, Tesluk, & Marrone, 2007; Morgeson, De-Rue, & Karam, 2010; Pearce et al., 2008; Seibert, Wang, & Courtright, 2011). According to Pearce, Hoch, Jeppesen, and Wegge (2010: 151), "shared leadership occurs when group members actively and intentionally shift the role of leader to one another as necessitated by the environment or circumstances in which the group operates." Klein, Ziegert, Knight, and Xiao (2006) observe a similar pattern of power dynamics in their study of medical trauma teams, describing how responsibility shifts among supervisors and subordinates over time. Finally, in self-managing teams with external leaders, it is apparent that there are shifts between the team and its formal external leader depending on task demands (Manz & Sims, 1987; Morgeson, 2005). These literatures therefore provide an opening to consider a counterpoint to traditional power arguments of stable hierarchical arrangements: *Power itself may not be stable within the team, with team members increasing or decreasing their expression of power based on situational demands.*

In this article, we build on the fundamental premise that power is dynamic and can shift among team members to reconceptualize power in groups not as a stable power hierarchy, but as a dynamic heterarchy of power relations. We borrow the word "heterarchy" from neurobiology—specifically, Mc-Culloch's (1945) work on cognitive structures, which showed that the brain is not organized hierarchically, but rather as a heterarchical neuro-cognitive system. Heterarchies imply that the power order among actors may shift depending on the source of power that is most immediately relevant to the situation. Thus we define a *power heterarchy* within teams as a relational system in which the relative power among team members shifts over time as the resources of specific team members become more relevant (and the resources of other members become less relevant) because of changes in the situation or task.

After developing the heterarchy concept, we integrate across micro and macro perspectives on power and team functioning to develop a set of hypotheses about how power heterarchies can foster greater team creativity. Specifically, we draw on two distinct theoretical paradigms: First, we build on Emerson's (1962) sociological theory of power-dependence to posit that the basis of relative power within teams is a team member's access to resources that enable the group to cope with uncertainty (Crozier & Friedberg, 1980; Hickson, Hinnings, Lee, Schneck, & Pennings, 1971). Second, we draw on psychological, approach-inhibition theories of power to explain how having power is positively associated with goal-related assertiveness and influence attempts (Anderson & Berdahl, 2002; Guinote, Judd, & Brauer, 2002; Keltner, Young, Heerey, Oemig, & Monarch, 1998; Kipnis, 1976; Magee & Galinsky, 2008). Using these theoretical mechanisms, we explain how heterarchical functioning within groups will promote creativity, particularly when group members see the shifts in power expression as legitimate.

To develop and test our theory of power heterarchies in teams, we conduct two studies. In the first study, we interview 21 members of 12 teams spanning a diverse range of organizational settings. Similar to Edmondson (1999), the purpose of these interviews is not to test specific hypotheses, but rather to document the phenomenon of interest in the field and to provide evidence of its external validity, in both hierarchical and non-hierarchical teams. In the second study, we test the internal validity of our theory via an experimental study of 45 cross-functional teams across three tasks. With this second study, we aim to document empirically how changes in situational task demands can shape individuals' expression of power in relation to others, the shifts in perceived legitimacy of these changing power expressions, and team creativity. We focus on team creativity because the creative process is about how teams combine, recombine, and synthesize disparate ideas (Gilson & Shalley, 2004; Hannah, Lord, & Pearce, 2011; Kurtzberg & Amabile, 2001; Taggar, 2002), and we expect power heterarchies to be a novel alternative to hierarchies through which cross-functional teams are able to leverage the diverse and unique capabilities of individual members. Indeed, one of the primary reasons for composing cross-functional teams is the production of creative outputs (van Knippenberg & Schippers, 2007).

In developing and testing our theory of power heterarchies in teams, we make four notable contributions to existing theory on power and team dynamics. First, conceptualizing teams as heterar-

chies offers a meso-level theory of power in groups that is unique from the micro and macro perspectives that are prevalent in the existing literature. On the one hand, prior research has focused on the long-term stability of macro-power hierarchies (Bierstedt, 1950; Goldhamer & Shils, 1939; Magee & Galinsky, 2008), or, in the case of Barker (1993) or Ridgeway and Berger (1986), the emergence of informal values, norms, and rules that replace formal hierarchy with an informal, "communal-rational" power system that remains relatively stable. On the other hand, the work of Ashforth (2001; Ashforth, Kreiner, & Fugate, 2000) on micro-transitions, if applied to power in groups, would suggest that power shifts rapidly, based on fine-grained and abrupt cues. In our case, we offer a meso-level theory of power dynamics whereby individuals increase or decrease their expression of power based on the situational demands of the task. These power heterarchies should remain more stable than the dynamics reflected in micro-transitions, but should be more flexible than the usual view of power hierarchies in groups.

Second, the predominant view in functionalist theories of power is that shifts in power and changes in power expressions among team members are dysfunctional. We question that assumption and explain how power heterarchies within which team members vary their expression of power based on task demands can enhance team creativity. In this sense, we challenge some of the most basic and fundamental assumptions about how power structures operate in groups. Whereas prior research has contrasted stable power hierarchies with egalitarian (shared leadership) structures, we introduce a third alternative: a heterarchy within which shifts in power expression based on task demands can improve team functioning.

Third, we contend that existing theories of power underestimate the importance of perceived legitimacy in explaining how people respond and react to others' power expressions, and ultimately the impact that power dynamics have on team functioning. In stable power hierarchies, legitimacy is a function of the hierarchical system itself. To the extent that individuals recognize and endorse the hierarchical ordering of individuals, the power hierarchy is perceived to be legitimate, and that legitimacy becomes institutionalized over time (Jost, Banaji, & Nosek, 2004; Magee & Galinsky, 2008). In a heterarchical system, however, power actively shifts as team members vary their expressions of power in relation to others based on task demands.

These dynamic power relations should introduce greater variability in who is and who is not seen as legitimately expressing power at any given time. Thus, in our discussion of power heterarchies, we relax the assumption that legitimacy is a function of hierarchy. Instead, we posit that individuals' expressions of power will be seen as more or less legitimate given the situation, and that shifts in these legitimacy perceptions will moderate how changes in power expression among team members impact on team functioning. In emphasizing the perceived legitimacy of power expressions, our theorizing foregrounds the social-psychological dynamics involved in the blurring of traditional hierarchies into team heterarchies.

Fourth, we tackle several of the questions posed in the shared leadership literature, including: what is being shared, how that sharing occurs, and why some people step up and lead without formal authority (e.g., Locke, 2003). By leveraging approach-inhibition theories of power, social exchange theory, and theories of legitimacy, we propose (and test) a model of power relations in teams that helps to address these questions by providing a concrete mechanism for leadership shifts in teams.

In short, we return to the tradition of person by situation analysis by developing and testing a theory of power dynamics in teams. We show that creativity is enhanced by horizontal power transitions in the functioning of teams in which power is expressed dynamically by members whose particular knowledge, skills, and abilities (KSAs) are valuable to the situational needs of the task at hand. These dynamics of power make diverse KSAs relevant to task needs valuable not only as team resources, but also as drivers of team structural functioning. Team members do not need to hold structural power, as suggested by traditional theories, to express power when their human capital is seen as valuable to the situational needs of the team. Finally, the legitimate expression of such power has important implications for team creativity.

HETERARCHIES IN CROSS-FUNCTIONAL TEAMS

A Field Illustration of the Phenomenon

Given the novelty of the phenomenon that we are studying, we performed some preliminary qualitative research following the structure presented in Edmondson (1999). This qualitative component in-

cluded the observation of five 2-hour teamwork events and 21 interviews of members of 12 teams in diverse organizational settings. We interviewed at least one and up to six members of each team for an average of 35 minutes per interview. The teams included an editorial team in the book publishing industry, an entrepreneurial startup team, an accounting team for a nationwide plasma collection operation, an academic committee at a medical school, a human resources team, a computer software development team, a sales task force at a national tile and stone company, a university IT team, a marketing and sales team at a large flooring company, and a top management team at a multinational insurance and financial services corporation. Team meetings were recorded when possible, and tapes and notes were then analyzed for exam-

ples of shifts in power, individuals' behavioral responses to those shifts, and perceptions of legitimacy for such power dynamics. The primary questions included in our semi-structured interview protocol are presented in the Appendix.

Table 1 summarizes the qualitative data, with a sample of quotations from our interviews supporting the conceptualization of teams as heterarchies of power. Three main observations stand out: the presence of situational shifts in power, the notion that legitimacy shifts with situational demands, and that these shifts in power expression are vital for team performance.

Situational shifts in power. Changes in situational demands are accompanied with changes in the relative power among team members. Among the teams that we observed and interviewed, shifts

TABLE 1
Qualitative Data for Heterarchical Power and its Implications in Cross-Functional Teams

Topic	Evidence
Situational shifts in perceptions and expressions of power	"When we are in this stage of the process, this is the person who has power. But once it moves [to another task] . . . then this other person has the power." (Shelley, editorial administrative manager) "I am really kind of a Jack-of-all-trades. I would say the most number one rule we have [in the team] is that taking charge is each of us . . . [team members] do different things . . . [and] . . . that changes over time who is 'officially' in charge in different areas." (Tara, computer software manager) "Everything was managed as a checklist of things to do . . . [but now that we work in cross-functional teams] it's becoming more of a collaborative project based environment. [as opposed to centrally controlled] . . . people started to step up . . . are more assertive . . . than they would have been before in their own areas of expertise. . ." (Ronald, accounting manager at a nationwide plasma collection center) "With the downturn of the economy, it was suddenly evident that cash was king and our chief financial officer was suddenly dramatically more emphatic than he had ever been. At first, everyone seemed surprised at his very emphatic e-mails and engagement in meetings . . ." (Pedro, Marketing vice-president in a multinational corporation) "[Another member of the team] initially was listening to us all the time [but when in a power situation] he just chose to jump in." (Marie, accounts manager in a marketing and sales team at a large flooring company)
Situational shifts in legitimacy of power expressions	"I don't believe that the leader [in our team] needs to weigh in on everything . . . [We expect] bright people to lead the charge where they have specialty knowledge or skill." (Brian, human resource team member in a large technology consulting team, and in fact the senior member of the team) "Yeah, I think it's okay for someone to take charge . . . granted that person is the authority [meaning having the expertise] for whatever the assignment is [at that time in the project]." (Tara, computer software manager, who then also offered the following example of illegitimate power expressions) "It was no longer relevant, the behavior was annoying and starting to hamper the team . . . it was patronizing as time went on . . . it didn't make sense anymore [in a new team situation]." "I think [at the beginning of team functioning] the operations manager . . . had more power [but later on, when in a situation of low power in the team] he came in wanting to be in charge and trying to get that or delegate that out and he, you know, pissed off the customer support guy." (Gaby, sales task force at a tile and stone company)

in power as a result of changes in situational demands are exemplified by the account that Shelley, an editorial administrative manager, gives of power shifts in her cross-functional work team: "When we are in this stage of the process, this is the person who has power. But once it moves [to another task with different demands] . . . then [that] other person has the power." These shifts in power result in different people at different times expressing power in relation to others in the team. As illustrated in Table 1, these power expressions are reported through phrases such as: "taking charge," "stepping up," being "more assertive," being "dramatically more emphatic," increased "engagement in meetings," or choosing "to jump in" rather than to listen.

Situational shifts in perceived legitimacy. The legitimacy of an individual's power expression is the degree to which that person has the right to express power (Dornbusch & Scott, 1975), based on the value of that team member given the situation. Therefore power expressions are seen as more legitimate to the extent that the team member possesses more resources to deal with situational demands. Our interviewees' comments and behaviors seemed generally in line with the thought expressed by Tara, a computer software manager, that "It's okay for someone to take charge . . . granted that person is the authority [meaning having the knowledge or expertise]" for the immediate needs of the project. As we see in the exemplary comments from interviewees in Table 1, when individuals' power expressions are not regarded as legitimate given the situation, those behaviors don't "make sense anymore." That is, when a team member does not possess the resources to address situational demands, power expressions by this person are perceived to be illegitimate. In contrast, when people have the "specialty knowledge or skill" required for a particular situation, they are expected to express power and to "lead the charge." Thus, as situational demands shift, the legitimacy of team members' power expressions shifts in line with those situational demands.

Power heterarchies and performance. Finally, it was also evident from our interviews that these heterarchical shifts in power—and the shifts in legitimacy of different people expressing power at different times—are associated with team performance. Isaac, a manager and member of a talent management and leadership development team, illustrates this association:

That person [who has the requisite expertise] leads for that piece of the work for that week. They call out what needs to be done. It is sort of a volunteer thing, but it also guides us into the places where you need help in order to execute against this thing. We can't do all we do without . . . pulling together other smart and dedicated people outside of our discipline to do all this kind of stuff.

Based on our interviews and observations, team members saw others' expressions of power as motivating and helpful, so as long as the power expressions were aligned with who and what was needed at that given time. These insights suggest that heterarchies—a dynamic and fluid shifting of power expressions—can be valuable to team processes and performance.

Power Heterarchies in Teams

We define power within teams as the degree to which individual team members, relative to other members, possess the resources necessary for addressing the team's situational demands and environmental uncertainties. This perspective is consistent with that of Hickson et al. (1971), Crozier (1964), and Perrow (1961), who frame power in reference to an individual's ability to cope with uncertainty, and is parallel to Emerson's (1962) idea of resources as the basis for power in social exchanges. According to Emerson (1981), a resource is valuable to the extent that other individuals perceive it as helpful in addressing situational demands.

Conceptualizing teams as heterarchies recognizes that the relative power among team members is based upon the extent to which an individual's resources enable the team to cope with situational demands and uncertainties. By framing teams as heterarchies, we are able to understand the experiences of the people in our qualitative interviews, who were continuously exposed to changes in the relative power of team members across time. With this heterarchical model of team interaction, we are also able to explain how shifts in interpersonal power expressions are at the root of scholars' observations that leadership can rotate or be shared among multiple group members (Erez, LePine, & Elms, 2002). When task needs change based on project, team, or external demands, the relative power among team members will reflect the degree to which team members possess the resources needed to cope with the changing demands and uncertainties in the team. To understand the im-

pact that these power shifts have on individuals within teams and overall team functioning, we develop a theory explaining how shifts in relative power resulting from evolving situational demands and uncertainties influence the degree to which individuals engage in actions designed to express their power, the degree to which these power expressions are perceived as legitimate, and the ultimate effect that these shifts in power expression and legitimacy have on team creativity.

Interpersonal power expressions in teams. An individual's power within a team is based on how valuable his or her resources are, given a particular situational demand or uncertainty (Emerson, 1962). Thus the nature of the situational demands and uncertainties that a team faces will determine an individual's relative power within that team. To the extent that situational demands and uncertainties favor some resources over others, those who hold the more (less) valued resources will possess more (less) power in the heterarchical system. In team settings, these situational demands and uncertainties are fluid and can change rapidly (Arrow, McGrath, & Berdahl, 2000), and we theorize that the relative power among team members will evolve as the situational demands and uncertainties change over time.

As relative power in the team shifts in response to changes in situational demands, the degree to which team members express power in relation to other members should also shift. According to approach-inhibition theories of power (Berdahl & Martorana, 2006; Fiske, 2004; Flynn, Gruenfeld, Molm, & Polzer, 2011; Galinsky, Gruenfeld, & Magee, 2003; Keltner, Gruenfeld, & Anderson, 2003; Lammers, Galinsky, Grordijn, & Otten, 2008), individuals associate power with certain behavioral tendencies that are "stored in memory and available for activation whenever one's power is made salient in a given situation" (Magee & Galinsky, 2008: 368). As situational demands change, the team members who evolve to feel more powerful given the increased relevance of their resources should engage in more approach-oriented, expressive behaviors aimed at claiming or enacting their power. In contrast, those team members who evolve to feel less powerful as a result of situation or task changes should become more inhibition-oriented and less likely to engage in behaviors aimed at claiming or enacting power in relation to others. Drawing from these approach-inhibition theories of power, we expect that changes in situational demands will bring about changes in rela-

tive power among team members. These changes in power should affect the interrelated system of behaviors among team members and, most notably, the degree to which team members attempt to display or claim their power.

We refer to team members' expressive-approach behaviors aimed at enacting their power in relation to others in the team as interpersonal power expressions. Specifically, the possession of power, perceived or real, increases the likelihood of individual action (Galinsky et al., 2003) and, in particular, individuals' attempts to claim or enact their power by means of actions such as ignoring details in information processing (Guinote, 2007), limiting reactions to others' emotional displays (Van Kleef, De Dreu, Pietroni, & Manstead, 2006), directing others (Anderson & Berdahl, 2002), speaking more or speaking out of turn (DePaulo & Friedman, 1998), openly expressing opinions and true attitudes (Anderson & Berdahl, 2002), and confronting low performers (Ferguson, Ormiston, & Moon, 2010). In this sense, interpersonal power expressions are not simply displays of a particular resource such as expertise, but rather are a broad set of expressive behaviors aimed at asserting power in relation to others.

In our observations and interviews, we see evidence of changes in situational demands affecting the pattern of interpersonal power expressions among team members. For example, in one of our observations of a team, a computer maintenance technician in a university consistently went to the board, took charge of the markers, refuted researchers' study design conditions, and provided research design suggestions whenever the discussion shifted to machine availability or computer lab needs. Despite her lower rank hierarchically, she ultimately had significant influence on how an experimental laboratory study was designed. Another example is that of Pedro, a vice president at a large multinational whom we interviewed. He narrated how:

> . . . with the downturn of the economy, it was suddenly evident that cash was king and our chief financial officer was suddenly dramatically more emphatic than he had ever been. At first, everyone seemed surprised at [the CFO's] very emphatic e-mails and engagement in meetings.

Integrating our notion of teams as heterarchical power structures with prior theory on power and approach-inhibition, we expect that changes in situational demands will prompt shifts in who within the team is expressing power in relation to others.

When situational demands change such that power shifts towards individuals who possess more valued resources, those individuals will psychologically experience a greater propensity towards action and thus engage in more interpersonal power expressions. In contrast, individuals who possess less valued resources given the new situational demands should experience power shifting away from them, feel greater inhibition, and thus engage in fewer power expressions. Thus, as people with more valued resources are increasing their expression of power, other team members with less valued resources are becoming more inhibition-oriented, more likely to accept or grant the power of others, and less likely to engage in competing power expressions. These complementary relational dynamics should enable shifts in power expressions among team members. Team members who possess the resources necessary for addressing current situational demands should exhibit an increase in power expressions, compared both to themselves and other group members in situations that imply a different power distribution.

Hypothesis 1. As situational demands shift, those members whose resources better fit the new demands will express relatively more power than other members of the team.

Shifts in power expressions and team creative performance. Team creativity is the production of useful, novel ideas or original problem solutions by team members working together (Amabile, 1996; Amabile, Conti, Coon, Lazenby, & Herron, 1996; Gutnick, Walter, Nijstad, & De Dreu, 2012; Sternberg, 1988). Much of the existing research on team creativity posits that diverse knowledge and resources among team members is vital for producing creative output, but the empirical evidence supporting this assertion is inconsistent (Jackson, Joshi, & Erhardt, 2003; Milliken & Martins, 1996; Shin & Zhou, 2007). One potential reason for these equivocal findings is rooted in the distinction between static, hierarchical structures and dynamic heterarchies. Team creativity requires not only the availability of individual resources such as expertise within the team, but also that individual members contribute those resources to enhance team creative performance. Yet static, hierarchical structures in which power is retained by more senior team members can limit the upstream flow of resources such as expertise and information (Gray & Ariss, 1985). In contrast, dynamic heterarchies are founded on an assumption that, as the task

changes, the team members with the resources that best address the situational demands will engage in greater interpersonal power expressions in relation to others. We expect this dynamic shifting of interpersonal power expressions to ensure that teams are able to access the capabilities most relevant to addressing dynamic situational demands, thus enabling more effective use of team resources and enhancing team creative performance.

Our argument for a positive relationship between shifting power expressions and team creativity is rooted in our conceptualization of power expressions as proximal indicators of situated power imbalances within the team. Consistent with social exchange theory, shifts in power activate a process of rebalancing—what Emerson (1962) calls "power-balancing mechanisms," or what Rusbult and Van Lange (2003) refer to as "reducing vulnerability." Whereas prior work suggests that these power imbalances are relatively stable because of the incentives for power holders to maintain their power (Lawler & Cohen, 1992; Molm, 1997), in heterarchical systems we expect a more dynamic rebalancing process that fosters creativity.

According to social exchange theory (Emerson, 1969), power imbalances are reduced through four mechanisms: (a) increasing the alternatives available to the less powerful actor, (b) reducing the alternatives available to the most powerful actor, (c) reducing the value of the exchange for the less powerful actor, or (d) increasing the value of the exchange to the most powerful actor. In teams, three of these mechanisms are not particularly applicable. Changing the alternatives available to team members is limited as a power-balancing mechanism because cross-functional team composition is usually constrained to a particular problem and diverse by definition. Reducing the value of the exchange for less powerful members is also a limited option in team settings because, in order to reduce the value of the exchange, the less powerful member must psychologically breach the interdependency implications of team membership. Thus, for team members who have become less powerful in a given situation, the mechanism most readily available to reduce their dependency and vulnerability (Emerson, 1969; Michaels & Wiggins, 1976) and to create some level of balancing mutual dependence (Rusbult & Van Lange, 2003) is to increase the value of the exchange for the powerful member. To accomplish this form of rebalancing, less powerful members must offer relational incentives—such as commitment, or their own relevant

knowledge and expertise—to mitigate the relationship strain brought about by the changing balance of power in the situation (Cook & Emerson, 1978).

We theorize that this specific form of rebalancing (increasing the value of the exchange to the more powerful actor) is important for the creative output of the team. In essence, when less powerful members increase the value of the exchange relationship with relatively more powerful members (in a given situation), these members are contributing diverse resources (information, expertise) to the team that are not only useful for rebalancing power within the team, but also vital to fostering greater creativity in the team (Amabile et al., 1996; Taggar, 2002). In this sense, shifts in interpersonal power expressions that are aimed at rebalancing power within the team are the same actions that enable teams to combine and recombine their diverse resources in ways that produce more creative outputs.

These dynamic shifts in power expression and their benefits for team functioning can be observed indirectly in both micro and macro literatures. For example, in team settings, certain roles are more important for team functioning depending on the situation, and the performance of people in these critical roles has a disproportionate amount of influence on team performance (Humphrey, Morgeson, & Mannor, 2009). As team tasks and situational demands change, the relative importance of different roles also changes. Thus we would expect shifts in interpersonal power expressions to be necessary in order for the team member who finds himself or herself in the most critical role and best equipped to handle the new situational demands to step up and contribute to the team. Also in a team setting, Klein et al. (2006) found that performance in unpredictable and dynamic environments was a function of whether teams could escape their own hierarchical and static power structures, and instead rapidly delegate the active leadership role among junior and senior members of the team. Finally, in a more macro organizational context, Davis and Eisenhardt (2011) came to a similar conclusion when they observed that interorganizational collaborations are most innovative when characterized by power structures under which firms rotate decision control based on which firm has access to the most relevant and useful technology and intellectual property, given the phase of the collaboration. Consistent with our theorizing, these literatures from disparate fields collectively suggest that shifts in interpersonal power expressions towards the people with the most relevant resources given the sit-

uation (and away from those with less relevant resources) will enable teams to produce more creative outputs.

Hypothesis 2. Positive shifts in interpersonal power expressions by members with the resources to resolve the current situational demands will be positively related to team creativity.

The moderating role of shifts in perceived legitimacy. Thus far, we have connected shifts in situational demands with shifts in power expressions, and then shifts in power expressions with team creativity. However, a key assumption in our theoretical arguments so far is that the shifts in power expressions are seen by others in the team as legitimate, given the changes in the environment. Team creativity requires the combination and recombination of team resources such as information and expertise. Yet if changes in power expression among team members are seen as ill-advised given the task—or even as inappropriate by those who want to maintain power for themselves—then the resource-combination process will be problematic and not foster as much creativity in the team. In this section, we consider shifts in perceived legitimacy as a boundary condition to our theorizing about shifts in power expression and creativity in teams.

In the existing literature, there are two dominant perspectives on legitimacy: propriety and validity (Dornbusch & Scott, 1975). Propriety reflects the belief that a behavior, norm, or value is right in a given situation. In contrast, validity reflects the belief that one has a personal obligation to obey power or norms. Given our focus on situational demands and uncertainties, we adopt a conceptualization of legitimacy as propriety so that we can understand how perceptions of legitimacy might change as situational needs and relative power among team members shift over time. We therefore define the legitimacy of power expressions as an actor's belief that the power expressions of a team member are appropriate patterns of behavior in a given situation.

As suggested from theories of social exchange (Emerson, 1962), there are several reasons why perceptions of legitimacy might not align with who has actual power or who is expressing power in a particular situation. Perceived legitimacy is the function of a meaning-making process by which social structures and the individuals that conform to them assign meaning and support to social enti-

ties, structures, positions, and behavior (Johnson, Dowd, & Ridgeway, 2006; Suchman, 1995; Weber, 1978 [1924]; Zelditch, 2001). Team members will believe that a team member's power expressions are appropriate when that team member has the appropriate resources with which to resolve a situational need. In this view, behaviors will be construed as legitimate based on their expected value to a particular set of constituents, which in our case is the team (Blau, 1964; Dowling & Pfeffer, 1975; Homans, 1961; Kelley & Thibaut, 1978). As Shelly, an editorial administrative manager, noted in one of our interviews:

> It was legitimate (for an administrative assistant in her team) to create schedules and coordinate the data processing staff . . . to [force] a deadline . . . and establish a process that they all had to follow . . . [because she] knew everyone's roles, how long it would take each person to complete their work, and she was aware of the issues that needed to be addressed.

Yet the meaning that team members ascribe to an individual's behavior and whether that behavior is seen as appropriately resolving a team need can also vary. Not only can members have divergent views on what the situational demands are for the team, but team members can also have different viewpoints on whether a particular member's resources actually resolve the team need.

We posit that the effect of shifts in power expressions on team creativity will be contingent on whether those shifts in power expression are seen by the team as legitimate (i.e., there is a concomitant shift in legitimacy in line with the shift in power expression). Team creativity requires not only the availability of resources such as information and expertise, but also that team members contribute those resources to the team and that other team members accept those resources as inputs into the creative process. When a behavior is seen as illegitimate, research shows that attraction and trust towards the actor exercising the behavior diminishes (Dirks & Ferrin, 2001; French & Raven, 1959). In addition, illegitimacy can reduce cooperation among group members (De Cremer & van Knippenberg, 2002; Lammers et al., 2008; Lenski, 1966) and cause individuals to be less committed to their relationships with group members (Bui, Peplau, & Hill, 1996; Rusbult, 1983). Based on this research, when shifts in power expression are seen as illegitimate, we expect the input of people increasing their power expressions not to receive the

consideration that they may warrant given their ability to help the team to cope with situational demands or uncertainty. In contrast, consistent with Suchman's (1995) conception of pragmatic exchange legitimacy, when team members' expressions of power are seen as legitimate, the input and resources of those members will be more fully incorporated into the group discussion and afforded greater consideration as group members combine and recombine knowledge to produce creative output. Higher cooperation, increased investment of resources, and more commitment by team members who have diverse personal resources and a shared interest in the success of an interdependent project— all benefits of seeing others' expressions of power as legitimate—will increase the amount and diversity of resources invested in a creative task. Thus changes in power expression owing to situational demands should help to foster a more creative team process, but only if those changes in power expression are seen as legitimate within the team.

Hypothesis 3. The positive effect of incremental shifts in interpersonal power expression on team creativity will be moderated by shifts in perceived legitimacy, such that shifts in power expression that are seen as legitimate (illegitimate) will strengthen (weaken) the effect on team creativity.

METHODS

To test our hypotheses directly, we conducted a three-round laboratory study. This study consisted of 45 cross-functional teams (which included the 516 directional relationships in which the focal member of the dyad is a participant), composed of individuals drawn from a U.S. business school. The teams participated in three rounds of a group creativity task. All teams were composed of two confederates and two or three participants (for a total of 131 participants). The average age in our population was 20.96. In addition, 60% of the sampled participants were men.

Procedure

We randomly assigned participants to teams upon entering the research lab. The confederates arrived at the same time as the participants and we randomly assigned these into teams. We first asked the participants to complete a questionnaire, which was used to set up the expertise manipulations (see

"Manipulations" for more information). After they had completed the questionnaire, we encouraged the team members to familiarize themselves with the information packet detailing the relevant information for the task (see "Team Task"). While this was occurring, we told the teams that the data from the questionnaires were being entered into a computer system, which would produce individual results on a marketing and presentation expertise index (see "Manipulations"). After a short delay, the researcher returned to the room and provided an overview of the team project task. This overview noted the responsibilities of the team during the task, presented the marketing expertise manipulation (see "Manipulations"), and highlighted that the top-performing teams would receive $500 for their participation. The teams then completed their three tasks and we presented a short questionnaire after each task.

Team Task

We tasked teams with designing a marketing strategy for the rollout of a new cell phone to a college population. We provided teams with information about the functions and specifications of the phone, its advantages and disadvantages relative to other phones currently on the market, testimonials about the phone, and the current marketing plan (aimed at a different target market). Over the course of three tasks, the teams were sequentially (Times 1 to 3):

1. to produce a marketing plan aimed at a college population (e.g., identifying the top three segments, clarifying their needs and preferences, determining the value proposition, etc.),
2. to design a mock website that would target the segments identified in the first task, and
3. to create a presentation aimed at top management of the cell phone company that would introduce the new marketing strategy (Task 1) and website (Task 2).

We designed each task to cue different team needs and the manipulations to allow the team to solve those needs. Task 1 required the team to address a specific marketing task that required content specific knowledge about marketing (in this case, creating a marketing plan). Task 2 was designed such that the participants lacked fundamental information about the client's requirements and interests, which required the team to collect this information from the client. Task 3 was designed such that the participants were ex-

pected to sell their ideas to upper levels of management (thus requiring in-depth knowledge about how to frame and present content in a convincing manner). These aspects of the tasks therefore changed the situational demands across tasks, which (in conjunction with our manipulations) should have primed the teams to shift power between team members across tasks.

Manipulations

Before Task 1, we implemented the "marketing expertise" manipulation: We told participants that the results of their questionnaires had been used to form a marketing expertise index. Scores for all team members were written on the board. Note that the scores themselves were randomly generated, however, and were in no way based on the specific results of the questionnaires. The results were always ordered such that the highest scorer was a confederate, followed by the participants, and trailed by the second confederate. For half of the teams, the score for the manipulated confederate was significantly higher than that of the remaining team members (e.g., 10.81 versus 5.93), whose scores were all grouped closely together. For the other half of the teams, the scores for all team members (including both confederates) were tightly grouped. Because there were no observable differences between the two populations, we collapsed across conditions for all of our analyses.

Before Task 2, we implemented the "access to information" manipulation: We informed teams that person assuming the contact role, which we had randomly assigned to one participant (not a confederate), would have the ability to gather additional information from the client about the website design task. Although the role holder was allowed to ask as many questions as he or she wanted, this person could contact the client representative (i.e., the researcher) only once during the task. For all teams, the holder of the contact role took advantage of this opportunity and asked the researcher a series of questions (but note that he or she was not permitted to ask these questions in front of the remainder of the team, but was required to leave the room and to meet individually with the researcher). Note too that there was a prepared set of answers to a wide selection of questions, so as to standardize the information provided to the teams.

Before Task 3, we implemented the "presentation expertise" manipulation: We again presented participants with scores for an expertise index (pur-

ported to derive from their questionnaires). For this task, we randomly assigned to a participant different than the holder of the contact role from Task 2 a higher score on the presentation expertise index than those of the remaining team members. All teams received this manipulation.

We believe that our manipulations are conceptually consistent with power in organizations because: (a) expertise and information power are important sources of power in organizations, and particularly important in situations in which they are relevant to team outcomes (Mechanic, 1962); (b) expertise and information power are especially important given our focus on self-managing teams (Pearce et al., 2008); and (c) although there are multiple forms of power at play in organizations, it is important to avoid conflating power broadly with formal authority (DeRue & Ashford, 2010), because formal authority does not necessarily trump other sources of power (Ibarra, 1993; Sparrowe, Liden, Wayne, & Kraimer, 2001).

For all tasks, we instructed the confederates to "go along" with the team, but not to introduce creative ideas, because we did not want to bias the outcome as a result of the confederates' activities. Moreover, we did not want to create norms of high power expression for those members whose resources better resolved the situational demands. Instead, the confederates' primary role was to observe and report the power expression of the participants (see "Variables" for information on the coding process). This method of data collection served as a non-obtrusive collection method such that the participants were unlikely to feel that they were actually being evaluated on specific behaviors. Note that the participants did not suspect that the purpose of this study was to examine power expression (as reflected in the responses from participants during the debriefing), which was likely aided by this unobtrusive measure.

We instructed teams to produce their output for each task on a large easel pad. They were not given any limits on the number of sheets used per task, nor on how they prepared the output. We used the output from each task for assessing team creativity.

Variables

Availability of unique resources for addressing situational demands. The primary independent variable in this study is the extent to which a specific member possessed unique resources for addressing the situational demands or uncertainties

in a specific task. In Task 1, we randomly assigned the marketing expert role to a confederate. For Task 2, we randomly assigned the contact role to a participant. For Task 3, we randomly assigned the presentation expert role to a different participant than the holder of the contact role.

Power expression. We measured power expression during the post-task questionnaire by asking the confederates to document the power expressions of each participant towards each individual team member, including the confederates, although not the power expression of the confederates towards the participants. This resulted in the confederates rating 12 directed dyads (for the five-person teams) for each task.

The confederates blind to the study hypotheses rated the extent to which the focal member of the dyad "expressed influence" and "applied pressure" towards the receiver using a 7-point Likert scale. This scale demonstrated adequate coefficient alpha reliability (α = .75, .80, .77 in Tasks 1–3), with levels above the standard cutoff for a new scale (Nunnally, 1978). Moreover, the confederates demonstrated significant agreement on their ratings across dyads and tasks (ICC(1) = .80, F = 4.95, $p < .001$).

We trained the confederates on this rating scale prior to participating in teams. More specifically, we developed a behaviorally anchored rating scale (BARS) (Schwab, Heneman, and DeCotiis, 1975) for evaluating power expression in this study. It is important to note that having a source of power that is situationally relevant is not equivalent to expressing power in that situation; having a situationally relevant power source (such as expertise) only implies that an individual may have the ability to express power in a way that the team might find legitimate.

After first assembling a list of ways in which power could be expressed in this study, we asked 10 PhD students familiar with the topic area to rate the magnitude of the power expressions from 1 to 7, where 1 represented no power expression and 7 represented high power expression. The raters demonstrated high levels of agreement (ICC(1, k) = .77, ICC(2, k) = .80, $F(62, 567)$ = 4.28, $p < .001$, r_{wg} = .99). We organized the resulting BARS following these results. For example, for expressed influence, "changing the time deadline" would qualify as a 7, whereas "change direction or tone of conversation" would qualify as a 5. For applied pressure, "tell members specifically what

to do" would qualify as a 7, whereas "seek consensus (initiate vote)" would qualify as a 4.

Legitimacy for power expression. We measured legitimacy for power expression by having the participants rate each team member (other than themselves) on two questions: "This team member had the right to influence others in this part of the project because of his or her expertise," and "This team member had the right to influence others in this part of the project because of his or her access to additional information." The first question tapped expertise legitimacy (which was directly relevant to the expertise roles), whereas the second question tapped information legitimacy (which was directly relevant to the contact role). This measure took its inspiration from Ellemers, Wilke, and van Knippenberg's (1993) measure of legitimacy. Raters exhibited significant agreement on both expertise legitimacy (ICC(1) = .65, $F = 2.86$, $p < .001$), and information legitimacy (ICC(1) = .61, $F = 2.56$, $p < .001$), across team members and time.

Power expression shift. Power expression shift was operationalized by calculating the extent to which the person who has the resources to address the situational demands changed his or her power expression levels between the previous time period and the current time period (e.g., the power expressed by the contact role in Task 2 minus that person's power expressed in Task 1), as compared to the change in power expressions by the remaining participants in the team. Therefore, for each time period, this shift was captured by the following expression:

Shift in Power Expressions

$$= \underset{t-(t-1)}{\Delta} \ AVG \ Power \ Expression_{FM}$$
$$- \underset{t-(t-1)}{\Delta} \ AVG \ Power \ Expression_{NFM}$$

where $_{t-(t-1)}$ indicates that the measure is assessing the shift in power expressions between each period and the previous period, $_{FM}$ refers to the focal member (i.e., the person who has the best resources to address situational demands), and $_{NFM}$ refers to the non-focal members in the team.

Legitimacy shift. Legitimacy shift was operationalized by calculating the extent to which the person who has the resources to address the situational demands differed in his or her scores for the legitimacy of his or her power expressions between tasks, as compared to the change in legitimacy of the power expressions of the remainder of the team. We utilized the form of legitimacy (either legiti-

macy for the expertise role or legitimacy for the contact role) relevant to the time period being examined. So, for example, when considering legitimacy shift in Task 2 (during which the contact role was the role with resources to address situational demands), we calculated legitimacy shift as the shift on the question, "This team member had the right to influence others in this part of the project because of his or her access to additional information" between Task 1 and Task 2. For each time period, this shift was captured by the following expression:

Shift in Legitimacy of PE

$$= \underset{t-(t-1)}{\Delta} \ AVG \ Legitimacy \ of \ PE_{FM}$$
$$- \underset{t-(t-1)}{\Delta} \ AVG \ Legitimacy \ of \ PE_{NFM}$$

Team creativity. To assess team creativity, we followed the most common method for measuring creativity (Zhou & Shalley, 2003) by employing a variation on Amabile's (1983) consensual assessment technique, which specifically focuses on subjective creativity ratings provided by independent evaluators. Our three subject matter experts (who were all upper-level PhD students in marketing and who all had worked in a marketing position for several years prior to entering a PhD program) were asked to evaluate the output of each task independently, for each team. Specifically, they were to provide a rating from 1 ("not at all creative: this output would be expected to fail completely") to 10 ("extremely creative: this output would be expected to have a large success in the marketplace"). There was significant agreement among the raters on the creativity of the team products across tasks (ICC(1, k) = .63, ICC(2, k) = .65, $F = 2.88$, $p < .001$, $r_{wg} = .82$).

Estimation and Analysis

To test Hypothesis 1, we conducted a multilevel analysis in which the member with the resources to address the situational demands was embedded in dyads with common others within teams. In this analysis, we specifically present a generalized mixed-effects model with nesting of our relationships within team and receiver of power within the dyad to account for team and power receiver effects in the model. This model tested the combined set of effects within an unbalanced team structure and produced balanced least squared means after con-

sidering all effects. We then performed *t*-tests of differences between the least squared means to test our hypothesis.

We conducted these tests to see whether two criteria for dynamism in teams held: (a) whether the member with the resources to address the situational demands was higher on power expression in the relevant time period as compared to other times (i.e., whether power expression changed within person over time), and (b) whether the member with the resources to address the situational demands was higher on power expression in the relevant time period as compared to other members in that time (i.e., whether power expression of the member with the highest perceived potential to cope with team uncertainties was relatively high compared to that of other members within a given time period, meaning that this was the highest power expresser for a given time period). These two tests are rather stringent tests of change in power in teams and the meeting of these criteria clearly tested whether heterarchical power shifted within teams. For this hypothesis, we limited the tests to the contact role and presentation expert, because the power expression of the holder of the marketing expert role was irrelevant, given that this was a confederate who was specifically told not to act differently than the remainder of the team.

Hypotheses 2 and 3 focused on the effect of shifts in power expression (Hypothesis 2) and its interaction with legitimacy shift (Hypothesis 3) on team creativity. Because power expression shift, legitimacy shift, and team creativity are all operationalized at the team level and directional, we conducted these analyses at the team level with one-tailed tests. To test our hypotheses, we con-

ducted a hierarchical ordinary least squares (OLS) regression in which team creativity was regressed on the two shift variables and their interaction.

RESULTS

Table 2 presents the means, standard deviations, and correlations for the study variables. The individual-level results are presented below the diagonal, whereas the team-level results are presented above the diagonal. The correlations show that having situationally relevant resources (i.e., holding the contact role in Time 2 or presentation expertise in Time 3) related to higher power expression in the relevant time period. However, these correlations are not sufficient for testing whether power expressions shifted across time.

Hypothesis 1 posited that the relative level of interpersonal power expression would shift across situations. Table 3 presents the generalized mixed-effects model regression results and the least squared means, and Table 4 presents the results of specific two-tailed tests of the differences between the least squared means. As shown in Table 3, the contact member in Time 2—in which access to information is the main situational demand—expressed significantly more power (B = .91, $p < .01$) than either of the other members in Time 2 or this member in other tasks. Similarly, the presentation expert expressed significantly more power (B = .66, $p < .01$) than other members in Time 3 or this member in other tasks. These results can specifically be observed in the test of differences in least squared means. As shown in Table 4, in Time 2 the contact member expressed more power than the other members ($t = 9.16$, $p < .01$). Accord-

TABLE 2
Means, Standard Deviations, and Correlations

Variable	M	SD	1	2	3	4	5	6	7	8
1. Contact (Time 2)	0.11	0.32	—							
2. Marketing expert (Time 3)	0.11	0.32	−0.12*	—						
3. Power expressed (Time 1)	2.61	1.14			—					
4. Power expressed (Time 2)	2.92	1.26	0.26*		0.71*	—				
5. Power expressed (Time 3)	2.80	1.26		0.08*	0.60*	0.74*	—			
6. Shift in power	0.52	1.09						—	0.06	0.24*
7. Shift in legitimacy	0.36	0.77							—	0.33*
8. Creativity	6.59	1.26								—

Note: Variables below the diagonal are at the individual level; variables above the diagonal are at the team level. Correlations with contact (time 2) and marketing expert (time 3) are limited to solely within-time relationships.

$n = 516$ (individual level), $n = 45$ (team level)
*$p < .05$

TABLE 3
Regression Results for Multilevel Model (Hypothesis 1)

	Power Expression	
	Regression Coefficient	Mean
Intercept	2.61**	
Contact member (Time 2)	0.90**	3.72
Contact member (Times 1 & 3)	0.51**	3.32
Non-contact members (Time 2)		2.81
Non-contact members (Times 1 & 3)	−.27**	2.54
Presentation expert (Time 3)	0.66**	3.55
Presentation expert (Times 1 & 2)	0.28**	3.16
Non-presentation expert (Time 3)		2.89
Non-presentation expert (Times 1 & 2)	−0.09	2.79

Note: n = 516
  *p < .05
  **p < .01

ingly, in Time 3, the presentation expert expressed more power than the other members (t = 6.65, p < .01). In addition, we found that the contact member expressed more power in Time 2 than that member expressed in other tasks (t = 4.16, p < .01), and the presentation expert expressed more power in Time 3 than that member expressed in other tasks (t = 4.02, p < .01). These results demonstrate that power expression shifted within members, so that possessing the resources to resolve situational demands resulted in more power expression than that member expressed at the other times in the study. Combined, these findings provide strong support for Hypothesis 1.

For Hypothesis 2, we predicted that shifts in power expression by the member who possessed the resources to resolve situational demands would

TABLE 4
Differences of Least Square Means (Hypothesis 1)

Comparison	Power Expression
Contact member (Time 2) vs. other members (Time 2)	9.16**
Contact member (Time 2) vs. contact member (Times 1 & 3)	4.16**
Presentation expert (Time 3) vs. other members (Time 3)	6.65**
Presentation expert (Time 3) vs. presentation expert (Times 1 & 2)	4.02**

Note: The values in the table are *t*-test results.

n = 516
  *p < .05
  **p < .01

influence creativity. Moreover, we predicted that this result would be contingent upon the shift in legitimacy (Hypothesis 3). The results of our analyses are presented in Table 5, which shows that shifts in power expression explained a significant 6% of the variance in team creativity (β = .24, p < .05), supporting Hypothesis 2. Shifts in legitimacy also had an impact on team creativity (β = .32, p < .01). However, what is notable is that the interaction between shifts in power expression and shifts in legitimacy was also significant (β = .26, p < .05, ΔR^2 = .04). We subsequently plotted the resulting interaction. As shown in Figure 1, high levels of shifts in power expression positively affected team creativity only in the presence of a concomitant shift in legitimacy. When there was no such shift in legitimacy, shifts in power expression had no effect on team creativity (and thus were equivalent to no shift in power expression). Thus the results provide strong support for Hypothesis 3.

DISCUSSION

The current study develops a dynamic conception of power in teams. Importantly, the notion of a power heterarchy challenges the conventional imagery of stable, hierarchical power structures, while simultaneously extending work on shared leadership and team self-management by articulating how the dynamic flow of power in teams occurs in relation to task demands, is contingent on legitimacy shifts, and has ultimate implications for team creativity. From this study, two complementary insights about interpersonal power dynamics in cross-functional teams become apparent. First,

TABLE 5
Regression Results for Team Creativity

	β	ΔR^2
Step 1		
Power expression shift	0.24*	0.06*
Step 2		
Power expression shift	0.22*	
Legitimacy shift	0.32**	0.10**
Step 3		
Power expression shift	0.10	0.04*
Legitimacy shift	0.20	
Power expression shift × Legitimacy shift	0.26*	

Note:
  *p < .05
  **p < .01

FIGURE 1
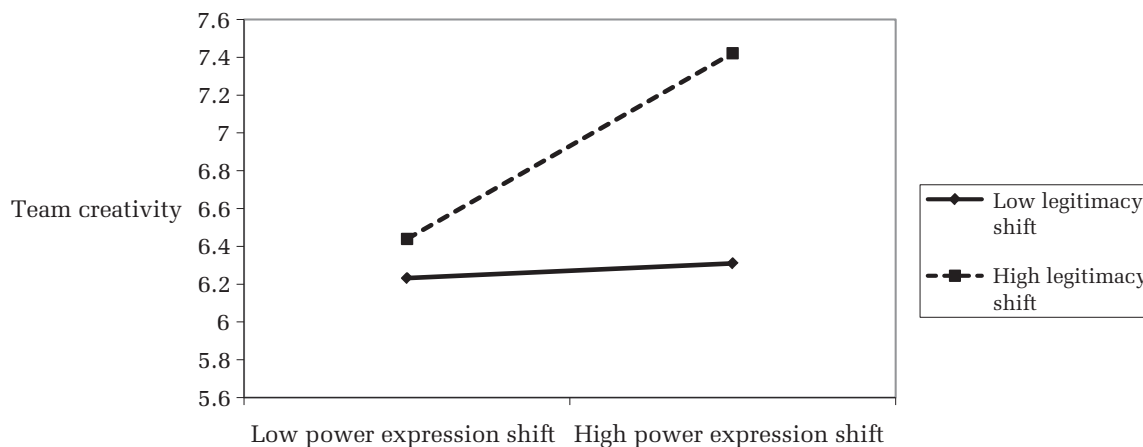
as the resources to resolve situational demands and uncertainties shift among team members, the extent to which team members express their power in relation to others also shifts. When a team member's resources become increasingly valuable owing to situational demands, that team member expresses more power relative to others in that situation, as well as relative to himself or herself in situations in which his or her resources are less relevant. Second, these shifts in power expression among team members enable teams to produce more creative outputs, but only if team members perceive the shifts in power expression to be legitimate. If the shift in power expression is not also accompanied by a shift in legitimacy for the new power holder, the positive effect on team creativity disappears.

These results, combined with observations from our interviews, present a dynamic view of power expressions and their legitimacy in teams. Relative to more traditional views of power as a stable hierarchy, our research suggests that, in contemporary teams, there may be a more fleeting and dynamic power structure than reflected in prior research. Our results specifically suggest that the power shifting implied in the literatures on shared leadership, dynamic delegation, and self-managing teams does occur. These shifts in power can occur naturally as situational demands change, and the subsequent shifts in power expression are an essential element of the team creative process. Yet our data do not speak to what extent formal authority structures can constrain or enable shifts in power expression. Future research is needed to clarify this issue.

With these results in mind, we offer several fundamental contributions to organizational theory and research. Whereas prior research has often sought to determine what leads to stability in power hierarchies, we have articulated a different approach that explains how dynamic situational demands and uncertainties can prompt frequent shifts in relative power among team members. Drawing from approach-inhibition theories of power, we explain how these power shifts prompt changes in team members' interpersonal power expressions and their implications for the team creative process. In this sense, not only do we promote a more dynamic conceptualization of power heterarchies in teams, but we also extend prior theory by demonstrating that dynamic power relationships do not send teams into "chaos and anarchy," as some have theorized; rather, power heterarchies may promote greater creativity and innovation.

Beyond demonstrating that dynamic power relations can be beneficial to team functioning, we also address several important theoretical questions from the literature on leadership in teams. First, team leadership scholars have asked what is actually being shared in a shared leadership process (e.g., Locke, 2003: 271, asks "what is it that should be shared. . .?"), as well as how that sharing occurs. Our study addresses these questions by theorizing, and then empirically demonstrating, that power expression is one aspect of group life that can be shared and which can shift among members to foster greater creativity. In particular, we find that power expressions shift in the direction of people who have the resources capable of fulfilling team needs, which is consistent with functional theories

of team leadership (McGrath, 1964; Morgeson et al., 2010). However, we extend this functional perspective by illustrating how multiple people in the group are dynamically stepping up and stepping back based on the extent to which their resources are congruent with and fit the team's need. Going forward, future research will need to clarify the range of ways in which this stepping up and stepping back can (and should) happen.

In addition, a fundamental question in the shared leadership literature is why some people (but not others) can step up and lead even though formal authority does not endorse their leadership. Whereas the focus has historically been on the attributes of the people stepping up and leading, our study takes an alternative and more social approach by examining how the perceptions of others in the team matter. Specifically, we explain how the shift in perceived legitimacy of power expressions (as seen by others in the group) is fundamental to whether shifts in power expressions have a positive effect on team functioning. This interactional element is akin to DeRue and Ashford's (2010) theory of leading and following interactions in groups. Moreover, this insight complements prior work on implicit leadership theories (De Groot, Aime, Johnson, & Kluemper, 2011; Lord, de Vader, & Alliger, 1986) and expertise in groups (Bunderson, 2003), in which certain attributes or expertise levels signal legitimacy that then enables some members (but not others) to express power in ways that help teams to function more effectively.

Finally, when we extend our study findings on power expressions to team leadership generally, our results suggest that changes in situational demands will cause teams to experience a shift in who is leading at any particular point in time. Past research on changing situational demands and disruptive events has focused on how team leaders help their teams to navigate these changing situations (Morgeson, 2005; Morgeson & DeRue, 2006), or on how teams adapt their behavior in response to these changes (DeRue, Hollenbeck, Ilgen, Johnson, & Jundt, 2008), but our study finds that these changes in task or situation can also alter the active leadership structure of the group. Thus one insight from the current study is that dynamic task conditions can be the impetus for changes in leadership structure.

Although we establish our heterarchy concept within team settings, the current study provides a model for exploring heterarchies across different levels of organizations. The self-managed, cross-functional team structures on which we focused tend to exist at intermediate and low levels of organizations, but there is no reason to presume that our theoretical model is limited to only these team types. In fact, in our qualitative study, we found evidence of these same power dynamics in top-management teams. Given the importance of top-management teams to the success of organizations (Hambrick & Mason, 1984), the ability of these types of team to operate successfully as a heterarchy may have significant bottom-line implications for their organizations. Moving beyond organizational teams, our conclusions may also have implications for other organizational forms (e.g., flat, temporary, or modular organizational structures) and interorganizational contexts. Cross-functional teams that span across organizational boundaries are a form of multidisciplinary collaboration that has been promoted by U.S. research agencies (e.g., the National Science Foundation, the National Institute of Health, the Department of Energy), and are often used in global, interorganizational collaboration contexts such as joint ventures and alliances. Yet research frequently concludes that these interorganizational partnerships are often less successful than anticipated (Marks & Mervis, 2001). One possible reason for this lack of success may be that the cross-functional teams used to manage interorganizational collaborations have not been able to shift from rigid power hierarchies in which members compete for power to more dynamic power heterarchies in which the person(s) with the most relevant resources express power at the right time and in the right situation. Thus one avenue for future research on power heterarchies would be to extend our work on organizational teams to encompass groups that span organizational boundaries.

Another important area for future research will be to investigate how managers can promote an organizational culture with the norms, processes, and systems that support a heterarchical power structure. Organizations and their employees are often deeply rooted in a conception of power as stable and hierarchical, yet managers can enhance creativity and innovation by fostering a more dynamic, heterarchical shifting of power. To accomplish this cultural shift in organizations, managers might promote self-management in teams to reduce the emphasis on formal hierarchy (Morgeson et al., 2010), or create incentives and support structures that promote voice and speaking up based on who has the most relevant resources for the situation, regardless of that person's hierarchical level in the

organization (Van Dyne & LePine, 1998). Promoting rotated leadership structures (Erez et al., 2002) might also be an effective strategy for developing a heterarchical culture as opposed to a culture steeped in hierarchy and the rigidity of power relations. Likewise, helping employees to understand how to express power effectively in different situations and how to grant others power effectively when situations demand it will be critical. Future research that explores how organizations can develop and sustain a dynamic power heterarchy within the context of existing hierarchical structures, as well as identify strategies that employees can use to shift power among team members effectively, would offer a noteworthy extension of this study.

Managerial Implications

Our study has a number of implications for managers at work. First, our study suggests that managers need to adapt their understanding of what resources (e.g., expertise, information, etc.) are needed for a given situation swiftly and accurately. The complexity and dynamism of team tasks are greater in contemporary organizations than ever before, and our study suggests that managers must dynamically adapt their understanding of situational demands and what resources are needed to address those demands. In parallel, managers must enable shifts in power expression among group members, such that those expressing power are those who have the resources most capable of addressing situational demands. Whereas the team leadership literature has historically emphasized behaviors such as strategy formulation and goal setting (DeRue, Nahrgang, Wellman, & Humphrey, 2011), which will certainly remain important for team functioning, our study findings suggest an increasing importance of team leadership functions that focus on reading the team's task environment, providing autonomy and fostering empowerment (Maynard, Mathieu, Gilson, O'Boyle, & Cigularov, 2013; Morgeson & Humphrey, 2006), and aligning resources, such as monitoring the team environment, sensemaking, and the provision of resources (Katz & Kahn, 1978; Marks, Mathieu, & Zaccaro, 2001; Morgeson et al., 2010).

Second, our study points to the importance of team member selection and having access to a diverse set of resources. As situational demands change, teams need real-time access to a wide range of resources, such that the team's resources can be aligned with changing situational demands through dynamic shifts in power expression among members. Teams can manage this need for diverse resources in three possible ways, each pointing to a different implication for how managers can lead teams effectively. First, managers might select team members such that a wide range of resources are internal to the team and not concentrated with a single team member, thus allowing power expressions to shift among team members as needed to meet situational demands (DeRue, Hollenbeck, Ilgen, & Feltz, 2010; Harrison & Humphrey, 2010; Humphrey, Hollenbeck, Meyer, & Ilgen, 2007). Recognizing that this compositional approach might be difficult considering the pace of change in contemporary organizations, we offer a second alternative: Managers might create a conception of team membership whereby individuals enter and exit the team in ways that are more dynamic than traditional conceptualizations of teams (Aime, Johnson, Ridge, & Hill, 2010). Historically, clear and stable membership was a defining feature of teams (Arrow et al., 2000), but we might need to relax this assumption and consider this more fluid team membership (see Arrow & McGrath, 1993; Choi & Thompson, 2005; Summers, Humphrey, & Ferris, 2012). Third, team leaders might manage team boundaries and external networks such that teams have real-time access to resources outside of the team (Aime, Van Dyne, & Petrenko, 2011), with one example of this being the recent work of Ancona (Ancona & Bresman, 2007; Ancona, Bresman, & Kaeufer, 2002) on "X-teams." This approach implies that power expressions can (and sometimes should) shift to external stakeholders who possess resources that are needed by the team.

Finally, managers must create a team culture in which shifts in power expression are not only free to occur as situational demands change, but also will be seen by the team as legitimate. This insight has implications for formal reward systems in teams (Beersma, Hollenbeck, Humphrey, Moon, Conlon, & Ilgen, 2003; Johnson et al., 2006), in that the reward structure should be such that group members are not vying for resources (e.g., always to be seen as the expert), and thus will be more likely to see shifts in power expression as legitimate ways in which to improve team performance (Aime, Meyer, & Humphrey, 2010). This insight also has implications for the relational aspects of team functioning, in particular the importance of trust among team members such that power expressions can

shift among members without other members feeling threatened.

Study Limitations and Future Research

The current study is not without limitations, and additional research is needed to refine and extend our research in important ways. For example, in the present study, we minimized potential redundancies among team members' resources (e.g., information, expertise); in organizational contexts, however, redundancies often exist such that team members' resources overlap (e.g., shared expertise or access to the same information). These redundancies could have important implications for shifts in power expressions and their legitimacy, and therefore for team performance. Redundancies in personal resources, such as expertise or access to information, may constrain shifts in power expressions and/or reduce the legitimacy of those shifts for team members, because team members will see multiple people, including themselves, as capable of addressing situational demands. If these redundancies produce a power struggle among members, it could undermine the positive benefits for team creativity and performance. Future research could simulate these redundancies by providing participants with similar resources, or studying in the field teams in which members come from similar backgrounds or have common experiences such that differences in expertise or access to information are minimized.

An additional limitation of the current study is that the experimental study was conducted in a laboratory context with newly formed ad hoc teams that were not embedded in an organizational context and which possessed clear bases of power among members. Whereas the laboratory context offers an ideal setting for testing the internal validity of our theory and causality, it sacrifices some of the external validity of field settings (Dipboye, 1990; Mook, 1983). Although a replication of our results in a field setting would certainly solidify the external validity of our findings, there are several reasons why we are confident that our findings will generalize to organizational settings. First, the controlled nature of our laboratory setting allowed us to assign teams to conditions randomly and to obtain alternative measures from multiple sources, both of which offer a strong base from which to draw causal inferences (Ilgen, 1999). Post-task interviews with participants demonstrated that participants were aware of the consequences of their

team's performance and were interested in winning the prize money, thereby increasing the psychological realism of our research setting and allowing a more precise test of our theory (Berkowitz & Donnerstein, 1982). Second, our interview data were collected in a diverse range of field settings and confirm that these dynamic power heterarchies occur in organizations. In general, we observed that the participants in the laboratory study attributed similar meaning to the variables of interest as did interviewees in the field (Berkowitz & Donnerstein, 1982; Locke, 1986). Moreover, our structured observations of teams at work were generally consistent with the idea that these dynamic power shifts and their legitimacy enable more creative team functioning. Third, research across management and organizational psychology has found that the effect sizes in laboratory research are essentially equivalent to the effect sizes found in field research, particularly in terms of research interested in group-focused or leader-focused questions (Mitchell, 2012). Thus, although we fully support future research replicating our findings in more diverse field settings, we are generally confident that our theory and results will generalize across settings.

We do expect, however, that more explicit consideration of context (group, organizational, industry) will offer insight into how situational and contextual factors can exacerbate or attenuate the effects of heterarchical power transitions (Johns, 2006). Specifically, it will be important for future research to extend our theory by articulating how individual, team, and broader organizational and contextual factors affect how shifts in power expressions occur and their legitimacy within teams, and ultimately the impact on team functioning. For example, formal compensation structures and performance evaluation systems may alter our findings such that individuals may be reluctant not only to grant others power (DeRue & Ashford, 2010), but also to express power on their own even if their resources do not meet the needs of the situation. Similarly, we expect that formal authority structures will affect how these power transitions and shifts in power expression occur. Our field interviews and observations indicate that power transitions are readily observable in teams with formal authority, but future research is needed to understand how and when such transitions are managed in teams in which formal authority structures are particularly salient. It may be that members with formal authority perceive power transitions as a threat to their position and attempt to constrain any

shifts in power expression. In contrast, in teams with high psychological safety and trust (Edmondson, 1999), it is possible that members with formal authority see shifts in power expression as valuable for soliciting input from diverse stakeholders and thus actively facilitate power transitions to harness team members' unique capabilities. While participants in our interviews were very explicit about instances in which the power behaviors occurred in their field settings even in the presence of formal authority lines, examining the integration between hierarchical and heterarchical power structures will produce additional insight beyond the self-managing, cross-functional teams of our core study.

Another potential limitation of our study is the limited array of conditions and power sources that we studied, given the already large scope of the project. We conditioned participants with two expertise power conditions and one information power condition. However, our design did not allow us to explore either the potential differences between a larger range of potential power sources, or the implications of repeated assignment of conditions to the same participant within a team over time (i.e., repeated power shifts directed at the same member). Yet it is possible that other sources of power, such as referent power, shift in ways that are fundamentally different than the expertise and information power studied herein. For example, individuals with referent power may view all situations as legitimate contexts for their power expression, and thereby attempt to act as de facto leaders in all situations and reduce the degree to which power shifts away from them. In addition, power could shift in teams such that one team member gets repeated opportunities to exercise power within a project. An extreme case may be the presence of a star member with an array of personal resources, such that this person is repeatedly expressing power in relation to other members across projects. Over time, as norms get established and patterns of behavior become routine, there may be power-stabilizing effects such that power does not shift as dynamically as we observed in our studies. Ironically, according to our findings, these power-stabilizing mechanisms could have adverse effects on team creativity should situations change, but the norms within the team keep power expressions from shifting to meet the new situational demands. Future research that investigates the conditions under which these power-stabilizing effects manifest and their implications would be particularly insightful.

We also make a key assumption in our theorizing about the rational processing of situational demands and aligning team capabilities with those demands: In particular, we assume that teams will behave rationally by transitioning power to the member with the situationally relevant resources. This assumption is founded on the idea that the situationally relevant member is willing and able to "step up" when the need arises, and that other team members are willing and able to grant power to others. One factor that may aid in this process is for a team to develop an accurate and comprehensive transactive memory system (Ellis, 2006; Lewis & Herndon, 2011). Understanding who knows (or can do) what will legitimate a shift in power expression, providing a meaningful boost in creativity. Moreover, given that research has identified that change inevitably produces maladaptive information exchange structures in teams (Summers et al., 2012), it is imperative that scholars examine how team members manage transitions and the conditions under which these power transitions occur with more or less disruption.

A third limitation is that we focused solely on groups operating in the U.S. culture. It is possible that national culture may affect how power transitions occur. On the one hand, the prevalence of shifts in power expression might be less in national cultures that are high power distance cultures. On the other hand, high power distance cultures such as those in Asia also tend to be more collectivistic. We would expect more collectivistic cultures to reduce the likelihood that team members question the legitimacy (or intent) of shifting power expressions—i.e., the default assumption would likely be that the person expressing power is doing so for the greater good of the group. Future research is needed to see how culture affects power transitions.

Another limitation of our study is that we examined the effects of power heterarchies for only team creativity and not for a broader array of team effectiveness criteria. Yet there is reason to suspect that our theoretical model will extend beyond creativity. Speed (or quantity) of performance, for example, should be directly affected by heterarchical power transitions. The ease with which power transitions occur within a team will likely affect whether a team is efficient in adapting quickly to changing circumstances, especially given how authority can limit adaptability (Hollenbeck, Ellis, Humphrey, Garza, & Ilgen, 2011). Similarly, we can speculate that team viability, one of the classic tripartite team outcomes (Hackman, 1987), will

also be affected by heterarchical power shifts. If team members feel that their unique capabilities are being properly utilized within a team (i.e., they are given the opportunity to express power when situationally relevant), they are likely to feel more valued in their role (Humphrey, Nahrgang, & Morgeson, 2007) and thus want to continue to work with the team (Bell & Marentette, 2011). With these other outcomes in mind, we encourage researchers to expand beyond creativity when studying the effects of power heterarchies in teams.

A final boundary condition that we must identify is that our theory is expressly concerned with teams that have a diversity of KSAs within the team and have some level of reciprocal interdependence among the members; hence our expressed focus on cross-functional teams. To this extent, we cannot speak to teams that are homogenous in composition, or which have a form of interdependence that minimizes flexible organization of behavior. For example, we would expect that assembly line teams (sequential interdependence) and sales teams (pooled interdependence) would shift power among members much less frequently.

An unanswered question in our research is a direct clarification of the mechanism for why people actually choose to engage in power expressions when the situation changes. We believe there to be at least three possible explanations. First, consistent with recent research on how power can engage individuals' approach systems and increase the likelihood of individual action (Galinsky et al., 2003), we expect changes in situational demands to make those people who possess the resources to address the new situational demands feel more powerful relative to those who do not have such resources. In turn, those who are, and who feel, more powerful should be more motivated to express their power through action in that given situation. Second, our intuition about other team members playing a role is consistent with recent work on how group members' granting of leadership is a precursor to others stepping up and taking on leadership responsibilities (DeRue & Ashford, 2010). Although this prior work is framed in terms of leadership, a similar granting process could occur within the context of shifting power expressions. As situations change, group members are likely to look to those with the resources best equipped to address situational demands for guidance and direction. This granting process should elicit action (in the form of power expressions) by those who possess those resources. Third, there is

research that suggests that, when individuals perceive that they have something to contribute to a group, they identify more strongly with the group and are more motivated to help the group (van Knippenberg, 2000). Thus there is likely a motivational component to why people express more power when situational demands make more salient the ways in which their resources (e.g., information, expertise) can contribute to group functioning. Given that our data do not allow us to tease apart these motivational mechanisms, future research is needed to provide insight into this issue.

Despite the noted limitations, the current study boasts a number of strengths that enhance the internal and external validity of its findings. First, by combining a qualitative interview-based study and a quantitative, laboratory-based study, we were able to improve the validity of our study by countering the limitations and trade-offs inherent in each method (Scandura & Williams, 2000). Second, the heterarchical concept provides a theoretical core integrating several distinct literatures that have yet to be connected, but each of which speak to the dynamic power relations within groups. Specifically, our model brings together sociological theories of power rebalancing (Emerson, 1962) with psychological theories of power and action (Galinsky et al., 2003), to explain how group members shift, share, and rotate power over time to enhance creative performance. Finally, our work focuses on the cross-functional teams that are important in knowledge-based work contexts (Albert & Bradley, 1997; Powell & Snellman, 2004; Teece, 2003), in which diverse pools of knowledge must be integrated to cope with the complexity and dynamism of today's organizations. Traditional theories present a conceptualization of power that is too stable and hierarchical to account fully for the power dynamics involved in teamwork.

CONCLUSION

Our theory and findings present a dynamic view of power expressions and their legitimacy in teams, thus suggesting that there may be a more dynamic power structure than that reflected in prior theory and research. Instead of a static, hierarchical power structure, we develop the concept of a power heterarchy. We hope that our findings and conclusions inspire future research that helps to update our theories of power and legitimacy to account for more dynamic and complex organizational settings. We think that the dynamism of organization-

al life should be matched with a conceptualization of dynamic power structures in groups. In our view, cross-functional teams, flat organizational structures, network and temporary organizations, and the large number of knowledge-based entrepreneurial startups represent an opportunity for a democratization of work practices that requires an extensive review of our most fundamental social-psychological assumptions about legitimacy and power.

REFERENCES

Aime, F., Johnson, S., Ridge, J. W., & Hill, A. D. 2010. The routine may be stable but the advantage is not: Competitive implications of key employee mobility. *Strategic Management Journal,* 31: 75–87.

Aime, F., Meyer, C. J., & Humphrey, S. E. 2010. Legitimacy of group rewards: Analyzing legitimacy as a condition for the effectiveness of group incentive designs. *Journal of Business Research,* 63: 60–66.

Aime, F., Van Dyne, L., & Petrenko, O. V. 2011. Role innovation through employee social networks: The embedded nature of roles and their effect on job satisfaction and career success. *Organizational Psychology Review,* 1: 339–361.

Albert, S., & Bradley, K. 1997. *Managing knowledge: Experts, agencies and organizations.* Cambridge, U.K.: Cambridge University Press.

Amabile, T. M. 1983. *The social psychology of creativity.* New York: Springer-Verlag.

Amabile, T. M. 1996. *Creativity in context: Update to the social psychology of creativity.* Boulder, CO: Westview Press.

Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. 1996. Assessing the work environment for creativity. *Academy of Management Journal,* 39: 1154–1184.

Ancona, D. G., & Bresman, H. 2007. *X-teams: How to build teams that lead, innovate and succeed.* Cambridge, MA: HBS Press.

Ancona, D. G., Bresman, H. M., & Kaeufer, K. 2002. The comparative advantage of X teams. *Sloan Management Review,* 43: 33–39.

Anderson, C., & Berdahl, J. L. 2002. The experience of power: Examining the effects of power on approach and inhibition tendencies. *Journal of Personality and Social Psychology,* 83: 1362–1377.

Anderson, C., & Brown, C. E. 2010. The functions and dysfunctions of hierarchy. In A. Brief & B. Staw (Eds.), *Research in organizational behavior,* vol. 30: 55–89. San Diego, CA: Elsevier.

Arrow, H., & McGrath, J. E. 1993. Membership matters: How member change and continuity affects small group structure, process, and performance. *Small Group Research,* 24: 334–361.

Arrow, H., McGrath, J. E., & Berdahl, J. L. 2000. *Small groups as complex systems.* Thousand Oaks, CA: Sage Publications, Inc.

Ashforth, B. E. 2001. *Role transitions in organizational life.* Mahwah, NJ: Lawrence Erlbaum Associates.

Ashforth, B. E., Kreiner, G. E., & Fugate, M. 2000. All in a day's work: Boundaries and micro role transitions. *Academy of Management Review,* 25: 472–491.

Barker, J. R. 1993. Tightening the iron cage: Concertive control in self-managing teams. *Administrative Science Quarterly,* 38: 408–437.

Barley, S. R. 1986. Technology as an occasion for structuring: Evidence from observations of CT scanners and the social order of radiology departments. *Administrative Science Quarterly,* 31: 78–108.

Beersma, B., Hollenbeck, J. R., Humphrey, S. E., Moon, H., Conlon, D. E., & Ilgen, D. R. 2003. Cooperation, competition, and team performance: Toward a contingency approach. *Academy of Management Journal,* 46: 572–590.

Bell, S. T., & Marentette, B. J. 2011. Team viability for long-term and ongoing organizational teams. *Organizational Psychology Review,* 1: 275–292.

Berdahl, J. L., & Martorana, P. 2006. Effects of power on emotion and expression during a controversial group discussion. *European Journal of Social Psychology,* 36: 497–509.

Berkowitz, L., & Donnerstein, E. 1982. External validity is more than skin deep: Some answers to criticisms of laboratory experiments. *American Psychologist,* 37: 245–257.

Bierstedt, R. 1950. An analysis of social power. *American Sociological Review,* 15: 730–738.

Blau, P. M. 1964. *Exchange and power in social life.* New York: Wiley.

Blau, P. M., & Scott, W. R. 1962. *Formal organizations.* San Francisco: Scott, Foreman.

Bui, K. V. T., Peplau, L. A., & Hill, C. T. 1996. Testing the Rusbult model of relationship commitment and stability in a 15-year study of heterosexual couples. *Personality and Social Psychology Bulletin,* 22: 1244–1257.

Bunderson, J. S. 2003. Recognizing and utilizing expertise in work groups: A status characteristics perspective. *Administrative Science Quarterly,* 48: 557–591.

Carson, J. B., Tesluk, P. E., & Marrone, J. A. 2007. Shared leadership in teams: An investigation of antecedent

conditions and performance. **Academy of Management Journal,** 50: 1217–1234.

Choi, H. S., & Thompson, L. 2005. Old wine in a new bottle: Impact of member change on creativity. **Organizational Behavior and Human Decision Processes,** 98: 121–132.

Cook, K. S., & Emerson, R. M. 1978. Power, equity, and commitment in exchange networks. **American Sociological Review,** 43: 721–739.

Crozier, M. 1964. **The bureaucratic phenomena.** Chicago: University of Chicago Press.

Crozier, M., & Friedberg, E. 1980. **Actors and systems: The politics of collective action.** Chicago: University of Chicago Press.

Davis, J. P., & Eisenhardt, K. M. 2011. Rotating leadership and collaborative innovation: Recombination processes in symbiotic relationships. **Administrative Science Quarterly,** 56: 159–201.

De Cremer, D., & van Knippenberg, D. 2002. How do leaders promote cooperation? The effects of charisma and procedural fairness. **Journal of Applied Psychology,** 87: 858–866.

De Groot, T., Aime, F., Johnson, S. G., & Kluemper, D. 2011. Does talking the talk help walking the walk? An examination of the effect of vocal attractiveness in leader effectiveness. **Leadership Quarterly,** 22: 680–689.

DePaulo, B. M., & Friedman, H. S. 1998. Nonverbal communication. In D. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), **Handbook of social psychology,** vol. 2: 3–40. New York: McGraw-Hill.

DeRue, D. S., & Ashford, S. J. 2010. Who will lead and who will follow? A social process of leadership identity construction in organizations. **Academy of Management Review,** 35: 627–647.

DeRue, D. S., Hollenbeck, J. R., Ilgen, D. R., & Feltz, D. 2010. Efficacy dispersion in teams: Moving beyond agreement and aggregation. **Personnel Psychology,** 63: 1–40.

DeRue, D. S., Hollenbeck, J. R., Ilgen, D. R., Johnson, M. D., & Jundt, D. 2008. How different team downsizing approaches influence team-level adaptation and performance. **Academy of Management Journal,** 51: 182–196.

DeRue, D. S., Nahrgang, J. D., Wellman, N., & Humphrey, S. E. 2011. Trait and behavioral theories of leadership: A meta-analytic test of their relative validity. **Personnel Psychology,** 64: 7–52.

Dipboye, R. L. 1990. Laboratory vs. field research in industrial and organizational psychology. **International Review of Industrial and Organizational Psychology,** 5: 1–34.

Dirks, K., & Ferrin, D. 2001. The role of trust in organizational settings. **Organization Science,** 12: 450–467.

Dornbusch, S., & Scott, W. R. 1975. **Evaluation and the exercise of authority.** San Francisco: Jossey-Bass.

Dowling, J., & Pfeffer, J. 1975. Organizational legitimacy: Social values and organizational behavior. **Pacific Sociology Review,** 18: 122–136.

Edmondson, A. 1999. Psychological safety and learning behavior in work teams. **Administrative Science Quarterly,** 44: 350–383.

Ellemers, N., Wilke, H., & van Knippenberg, A. 1993. Effects of the legitimacy of low group or individual status on individual and collective status-enhancement strategies. **Journal of Personality and Social Psychology,** 64: 766–778.

Ellis, A. P. J. 2006. System breakdown: The role of mental models and transactive memory in the relationship between acute stress and team performance. **Academy of Management Journal,** 49: 576–589.

Emerson, R. M. 1962. Power-dependence relations. **American Sociological Review,** 27: 31–41.

Emerson, R. M. 1969. Operant psychology and exchange theory. In R. Burgess & D. Bushell (Eds.), **Behavioral sociology:** 379–405. New York: Columbia University Press.

Emerson, R. M. 1981. **Social exchange theory.** New York: Basic Books, Inc.

Erez, A., LePine, J. A., & Elms, H. 2002. Effects of rotated leadership and peer evaluation on the functioning and effectiveness of self-managed teams: A quasi-experiment. **Personnel Psychology,** 55: 929–948.

Ferguson, A. J., Ormiston, M. E., & Moon, H. 2010. From approach to inhibition: The influence of power on responses to poor performers. **Journal of Applied Psychology,** 95: 305–320.

Fiske, S. T. 2004. **Social beings: A core motives approach to social psychology.** New York: Wiley.

Flynn, F. J., Gruenfeld, D., Molm, L. D., & Polzer, J. T. 2011. Social psychological perspectives on power in organizations. **Administrative Science Quarterly,** 56: 495–500.

French, J. R. P., & Raven, B. 1959. The bases of social power. In D. Cartwright (Ed.), **Studies in social power:** 150–167. Ann Arbor: University of Michigan Press.

Galinsky, A. D., Gruenfeld, D. H., & Magee, J. C. 2003. From power to action. **Journal of Personality and Social Psychology,** 85: 453–466.

Gilson, L. L., & Shalley, C. E. 2004. A little creativity goes a long way: An examination of teams' engagement in

creative processes. *Journal of Management,* 30: 453–470.

Goldhamer, H., & Shils, E. A. 1939. Types of power and status. *American Journal of Sociology,* 45: 171–182.

Gray, B., & Ariss, S. S. 1985. Politics and strategic change across organization life cycles. *Academy of Management Review,* 10: 707–723.

Guinote, A. 2007. Power and goal pursuit. *Personality and Social Psychology Bulletin,* 33: 1076–1087.

Guinote, A., Judd, C. M., & Brauer, M. 2002. Effects of power on perceived and objective group variability: Evidence that more powerful groups are more variable. *Journal of Personality and Social Psychology,* 82: 708–721.

Gutnick, D., Walter, F., Nijstad, B. A., & De Dreu, C. K. W. 2012. Creative performance under pressure: An integrative conceptual framework. *Organizational Psychology Review,* 2: 189–207.

Hackman, R. J. 1987. The design of work teams. In J. W. Lorsch (Ed.), *Handbook of organizational behavior:* 315–342. Englewood, NJ: Prentice Hall.

Halevy, N., Chou, E. Y., & Galinsky, A. D. 2011. A functional model of hierarchy: Why, how, and when vertical differentiation enhances group performance. *Organizational Psychology Review,* 1: 32–52.

Hambrick, D. C., & Mason, P. A. 1984. Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review,* 9: 193–206.

Hannah, S. T., Lord, R. G., & Pearce, C. L. 2011. Leadership and collective requisite complexity. *Organizational Psychology Review,* 1: 215–238.

Hardy, C., & Clegg, S. 2006. Some there call it power. In S. Clegg, C. Hardy, T. B. Lawrence, & W. R. Nord (Eds.), *Sage handbook of organization studies:* 754–775. London: Sage Publications.

Harrison, D. A., & Humphrey, S. E. 2010. Designing for diversity or diversity for design? Tasks, interdependence, and within-unit differences at work. *Journal of Organizational Behavior,* 31: 328–337.

Harrison, D. A., & Klein, K. J. 2007. What's the difference? Diversity constructs as separation, variety, or disparity in organizations. *Academy of Management Review,* 32: 1199–1229.

Hickson, D. J., Hinnings, C. R., Lee, C. A., Schneck, R. E., & Pennings, J. M. 1971. A strategic contingencies theory of interorganizational power. *Administrative Science Quarterly,* 19: 22–44.

Hollenbeck, J. R., Ellis, A. P. J., Humphrey, S. E., Garza, A. S., & Ilgen, D. R. 2011. Asymmetry in structural adaptation: The differential impact of centralizing versus decentralizing team decision-making struc-

tures. *Organizational Behavior and Human Decision Processes,* 114: 64–74.

Homans, G. C. 1961. *Social behavior: Its elementary forms.* New York: Harcourt Brace.

Humphrey, S. E., Hollenbeck, J. R., Meyer, C. J., & Ilgen, D. R. 2007. Trait configurations in self-managed teams: A conceptual examination of the use of seeding to maximize and minimize trait variance in teams. *Journal of Applied Psychology,* 92: 885–892.

Humphrey, S. E., Morgeson, F. P., & Mannor, M. J. 2009. Developing a theory of the strategic core of teams: A role composition model of team performance. *Journal of Applied Psychology,* 94: 48–61.

Humphrey, S. E., Nahrgang, J. D., & Morgeson, F. P. 2007. Integrating motivational, social, and contextual work design features: A meta-analytic summary and theoretical extension of the work design literature. *Journal of Applied Psychology,* 92: 1332–1356.

Ibarra, H. 1993. Power, social influence, and sense making: Effects of network centrality and proximity on employee perceptions. *Administrative Science Quarterly,* 38: 277–303.

Ilgen, D. R. 1999. Teams embedded in organizations. *American Psychologist,* 54: 129–139.

Jackson, S. E., Joshi, A., & Erhardt, N. L. 2003. Recent research on team and organizational diversity: SWOT analysis and implications. *Journal of Management,* 29: 801–830.

Johns, G. 2006. The essential impact of context on organizational behavior. *Academy of Management Review,* 31: 386–408.

Johnson, C., Dowd, T. J., & Ridgeway, C. L. 2006. Legitimacy as a social process. *Annual Review of Sociology,* 32: 53–78.

Jost, J. T., Banaji, M. R., & Nosek, B. A. 2004. A decade of system justification theory: Accumulated evidence of conscious and unconscious bolstering of the status quo. *Political Psychology,* 25: 881–920.

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

Kelley, J. W., & Thibaut, H. H. 1978. *Interpersonal relations: A theory of interdependence.* New York: Wiley.

Keltner, D., Gruenfeld, D. H., & Anderson, C. 2003. Power, approach, and inhibition. *Psychological Review,* 110: 265–284.

Keltner, D., Young, R. C., Heerey, E. A., Oemig, C., & Monarch, N. D. 1998. Teasing in hierarchical and intimate relations. *Journal of Personality and Social Psychology,* 75: 1231–1247.

Kipnis, D. 1976. *The powerholders.* Chicago: University of Chicago Press.

Klein, K. J., Ziegert, J. C., Knight, A. P., & Xiao, Y. 2006. Dynamic delegation: Shared, hierarchical, and deindividualized leadership in extreme action teams. *Administrative Science Quarterly,* 51: 590–621.

Kurtzberg, T. R., & Amabile, T. M. 2001. From Guilford to creative synergy: Opening the black box of team-level creativity. *Creativity Research Journal,* 13: 285–294.

Lammers, J., Galinsky, A. D., Gordijn, E. H., & Otten, S. 2008. Illegitimacy moderates the effects of power on approach. *Psychological Science,* 19: 558–564.

Lawler, E. E., & Cohen, S. G. 1992. Designing pay systems for teams. *American Compensation Association Journal,* 1: 6–19.

Lenski, G. E. 1966. *Power and privilege: A theory of social stratification.* New York: McGraw-Hill.

Lewis, K., & Herndon, B. 2011. Transactive memory systems: Current issues and future research directions. *Organization Science,* 22: 1254–1265.

Locke, E. A. 1986. Generalizing from laboratory to field: Ecological validity of abstraction of assential elements? In E. A. Locke (Ed.), *Generalizing from laboratory to field settings: Research findings from industrial-organizationalpsychology,organizational behavior, and human resource management:* 3–9. Lexington, MA: D.C. Heath and Company.

Locke, E. A. 2003. Leadership: Starting at the top. In C. L. Pearce & J. A. Conger (Eds.), *Shared leadership: Reframing the hows and whys of leadership:* 271–284. Thousand Oaks, CA: Sage.

Lord, R. G., de Vader, C. I., & Alliger, G. M. 1986. A meta-analysis of the relation between personality traits and leadership perceptions: An application of validity generalization procedures. *Journal of Applied Psychology,* 71: 402–410.

Magee, J. C., & Galinsky, A. D. 2008. Social hierarchy: The self-reinforcing nature of power and status. *Academy of Management Annals,* 2: 351–398.

Manz, C. C., & Sims, H. P., Jr.. 1987. Leading workers to lead themselves: The external leadership of self-managed work teams. *Administrative Science Quarterly,* 32: 106–128.

Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. 2001. A temporally based framework and taxonomy of team processes. *Academy of Management Review,* 26: 356–376.

Marks, M. L., & Mervis, P. H. 2001. Making mergers and acquisitions work: Strategic and psychological preparation. *Academy of Management Executive,* 15: 80–94.

Maynard, M. T., Mathieu, J. E., Gilson, L. L., O'Boyle, E. H., & Cigularov, K. P. 2013. Drivers and Outcomes of team psychological empowerment: A meta-ana-

lytic review and model text. *Organizational Psychology Review,* 3: 101–137.

McCulloch, W. 1945. A heterarchy of values determined by the topology of nervous nets. *Bulletin of Mathematical Biophysics,* 7: 89–93.

McGrath, J. E. 1964. *Social psychology: A brief introduction.* New York: Holt, Rinehart and Winston.

Mechanic, D. 1962. Sources of power of lower participants in complex organizations. *Administrative Science Quarterly,* 7: 349–364.

Michaels, J. W., & Wiggins, J. A. 1976. Effects of mutual dependency and dependency asymmetry on social exchange. *Sociometry,* 39: 368–376.

Milliken, F. J., & Martins, L. L. 1996. Searching for common threads: Understanding the multiple effects of diversity in organizational groups. *Academy of Management Review,* 21: 402–433.

Mitchell, G. 2012. Revisiting truth or triviality: The external validity of research in the psychological laboratory. *Perspectives on Psychological Science,* 7: 109–117.

Molm, L. D. 1997. *Coercive power in social exchange.* Cambridge, U.K.: Cambridge University Press.

Mook, D. G. 1983. In defense of external invalidity. *American Psychologist,* 38: 379–387.

Morgeson, F. P. 2005. The external leadership of self-managing teams: Intervening in the context of novel and disruptive events. *Journal of Applied Psychology,* 90: 497–508.

Morgeson, F. P., & DeRue, D. S. 2006. Event criticality, urgency, and duration: Understanding how events disrupt teams and influence team leader intervention. *Leadership Quarterly,* 17: 271–287.

Morgeson, F. P., DeRue, D. S., & Karam, E. P. 2010. Leadership in teams: A functional approach to understanding leadership structures and processes. *Journal of Management,* 36: 5–39.

Morgeson, F. P., & Humphrey, S. E. 2006. The work design questionnaire (WDQ): Developing and validating a comprehensive measure for assessing job design and the nature of work. *Journal of Applied Psychology,* 91: 1321–1339.

Nunnally, J. C. 1978. *Psychometric theory.* New York: McGraw-Hill.

O'Toole, J., Galbraith, J., & Lawler, E. E. III. 2003. The promise and pitfalls of shared leadership: When two (or more) heads are better than one. In C. L. Pearce & J. A. Conger (Eds.), *Shared leadership: Reframing the hows and whys of leadership:* 250–265. Thousand Oaks, CA: Sage.

Pearce, C. L., Conger, J. A., & Locke, E. A. 2008. Shared

leadership theory. *Leadership Quarterly,* 19: 622–628.

Pearce, C. L., Hoch, J., Jeppesen, H., & Wegge, J. 2010. New forms of management: Shared and distributed leadership in organizations. *Personnel Psychology,* 9: 151–153.

Perrow, C. 1961. The analysis of goals in complex organizations. *American Sociological Review,* 26: 854–866.

Pfeffer, J. 1981. *Power in organizations.* Marshfield, MA: Pitman.

Powell, W. W., & Snellman, K. 2004. The knowledge economy. *Annual Review of Sociology,* 30: 199–220.

Ridgeway, C., & Berger, J. 1986. Expectations, legitimation, and dominant behavior in task groups. *American Sociological Review,* 51: 603–617.

Rusbult, C. E. 1983. A longitudinal test of the investment model: The development (and deterioration) of satisfaction and commitment in heterosexual involvements. *Journal of Personality and Social Psychology,* 45: 101–117.

Rusbult, C. E., & Van Lange, P. A. M. 2003. Interdependence, interaction, and relationships. *Annual Review of Psychology,* 54: 351–375.

Scandura, T. A., & Williams, E. A. 2000. Research methodology in management: Current practices, trends, and implications for future research. *Academy of Management Journal,* 43: 1248–1264.

Schwab, D. P., Heneman, H. G. III, & DeCotiis, T. A. 1975. Behaviorally anchored rating scales: A review of the literature. *Personnel Psychology,* 28: 549–562.

Seibert, S. E., Wang, G., & Courtright, S. H. 2011. Antecedents and consequences of psychological and team empowerment in organizations: A meta-analytic review. *Journal of Applied Psychology,* 96: 981–1003.

Shin, S. J., & Zhou, J. 2007. When is educational specialization heterogeneity related to creativity in research and development teams? Transformational leadership as a moderator. *Journal of Applied Psychology,* 92: 1709–1721.

Sparrowe, R. T., Liden, R. C., Wayne, S. J., & Kraimer, M. L. 2001. Social networks and the performance of individuals and groups. *Academy of Management Journal,* 44: 316–325.

Sternberg, R. J. 1988. Mental self-government: A theory of intellectual styles and their development. *Human Development,* 31: 197–224.

Suchman, M. C. 1995. Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review,* 20: 571–610.

Summers, J. K., Humphrey, S. E., & Ferris, G. R. 2012. Team member change, flux in coordination, and performance: Effects of strategic core roles, information transfer, and cognitive ability. *Academy of Management Journal,* 55: 314–338.

Taggar, S. 2002. Individual creativity and group ability to utilize individual creative resources: A multilevel model. *Academy of Management Journal,* 45: 315–330.

Teece, D. 2003. Expert talent and the design of (professional service) firms. *Industrial and Corporate Change,* 12: 895–916.

Tushman, M. L., & Anderson, P. 1986. Technological discontinuities and organizational environments. *Administrative Science Quarterly,* 31: 439–465.

Van Dyne, L., & LePine, J. A. 1998. Helping and voice extra-role behaviors: Evidence of construct and predictive validity. *Academy of Management Journal,* 41: 108–119.

Van Kleef, G. A., De Dreu, C. K. W., Pietroni, D., & Manstead, A. S. R. 2006. Power and emotion in negotiation: Power moderates the interpersonal effects of anger and happiness on concession making. *European Journal of Social Psychology,* 36: 557–581.

van Knippenberg, D. 2000. Work motivation and performance: A social identity perspective. *Applied Psychology,* 49: 357–371.

van Knippenberg, D., & Schippers, M. C. 2007. Work group diversity. *Annual Review of Psychology,* 58: 515–541.

Weber, M. 1946. Bureaucracy. In H. H. Gerth & C. W. Mills (Eds.), *From Max Weber: Essays in sociology:* 196–244. New York: Oxford University Press.

Weber, M. 1978 [1924]. *Economy and society.* I. G. Roth & C. Wittich (Eds.). Berkeley, CA: University of California Press.

Zelditch, M. 2001. Theories of legitimacy. In J. Jost & B. Major (Eds.), *The psychology of legitimacy: Emerging perspectives on ideology, justice, and intergroup relations:* 33–53. Cambridge, U.K.: Cambridge University Press.

Zhou, J., & Shalley, C. E. 2003. Research in employee creativity: A critical review and directions for future research. In J. Martocchio (Ed.), *Research in personnel and human resource management,* vol. 22: 165–217. Oxford, U.K.: Elsevier.

APPENDIX

1. Describe your team and its work: How many team members, key tasks, goals, etc.?
2. Can you please describe what the members of your team contribute to the team?
3. To what extent do different team members "take charge" at different times in projects? Can you give me an example of this happening?

4. To what extent do you feel this shifting of power helps or hurts the team? Both? Why?
5. When is it OK and when is it not OK for different people to take charge?
6. Can you give me an example of conflict in the group based on the ways in which people use power?

————⋀⋀————

Federico Aime (aime@okstate.edu) is associate professor of management at the Spears School of Business, Oklahoma State University. He received his PhD from the Eli Broad Graduate School of Business at Michigan State University. His research focuses on decision making and performance across levels of analysis.

Stephen E. Humphrey (stephen.humphrey@psu.edu) is associate professor of management at the Smeal College of Business, Pennsylvania State University. He received his PhD from the Eli Broad Graduate School of Business at Michigan State University. His research centres primarily on the organizing processes of teams, with a particular focus on dyadic and role relationships.

D. Scott DeRue (dsderue@umich.edu) is professor of management at the University of Michigan's Stephen M. Ross School of Business. His research focuses on leadership and team performance.

Jeffrey B. Paul (jeff-paul@utulsa.edu) is assistant professor in the Department of Management and Marketing at the Collins College of Business, University of Tulsa. He received his PhD from Oklahoma State University's Spears School of Business. Jeff's current research focuses primarily on work teams, with an emphasis on team dynamics and work climates.

————⋀⋀————