Team leadership: A review and look ahead

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25

Team Leadership: A Review and Look Ahead

C. Shawn Burke, Deborah DiazGranados and Eduardo Salas

INTRODUCTION

Several researchers investigating the prevalence of teams in organizations have demonstrated that the use of teams is high (e.g., Boiney, 2001; Devine, Clayton, Philips, Dunford, & Melner, 1999; DiazGranados, Klein, Lyons, Salas, Bedwell, & Weaver, 2008). Boiney (2001) reported that 68% of Fortune 500 companies use self-managed teams. Additionally, DiazGranados et al. (2008) surveyed human resource, organizational development, and training professionals in 185 organizations and found that 94% of the respondents indicated that their organization used teams. As the prevalence of teams has increased, researchers and practitioners have sought to understand the factors that promote their effectiveness. One factor argued to be critical in determining team effectiveness is team leadership (Zaccaro, Rittman, & Marks, 2001).

In this vein, conceptual and empirical work on team leadership has exploded within the last 10 years. Early work in this area typically applied individual- and organizational-level leadership theories to teams. However, this work does not capture the synergistic nature of team leadership. It has been argued that work on team leadership needs to move beyond adapting individual- and organizational-level leadership theories to teams (Burke, Stagl, Klein, Goodwin, Salas, & Halpin, 2006; Kozlowski, Watola, Jensen, Kim, & Botero, 2009; Zaccaro Heinen, & Shuffler, 2009). In line with this, several researchers have noted that we know surprisingly little about '… how leaders create and handle effective teams' (Zaccaro et al.,

2001, p. 452) and there needs to be a focus on the leadership of teams (Hackman & Walton, 1986; Zaccaro et al., 2009).

Researchers have called for work that explicitly examines the leadership functions, styles, and behaviors that contribute to promoting the coordinated, integrated, and adaptive processes required for effective teamwork. As compared to traditional leadership, team leadership dynamically varies with the situation, assumes subordinates roles and linkages are tightly coupled, and highlights coordination demands (Kozlowski, 2002). There is an emphasis on 'structuring and regulating team processes to meet shifting internal and external contingencies' (Salas, Burke, & Stagl, 2004, p. 343). As such, team leadership can be defined as the enactment of the affective, cognitive, and behavioral processes needed to facilitate performance management (i.e., adaptive, coordinated, integrated action) and team development.

The purpose of this chapter is to briefly review the state of the art in team leadership. In doing so, four primary leadership foci will be discussed: leadership of co-located teams; virtual teams; networked teams (i.e., multiteam systems); and shared leadership. Although space constraints limit a detailed examination of the entire body of literature, what follows is a high-level overview of major conceptual contributions in each of these four foci and corresponding key empirical findings. This is followed by a critical analysis of the research methodologies used both within the specific foci as well as across the broader team leadership domain. The chapter concludes with a section that discusses areas for future research.

THEORETICAL AND EMPIRICAL FOUNDATIONS: UNDERSTANDING TEAM LEADERSHIP

Leadership of co-located teams

Perhaps one of the most commonly researched aspects of team leadership pertains to the leadership of co-located teams, as examined through the theoretical foundation of functional leadership. The functional approach views leadership as social problem solving and states that the leader's main job 'is to do, or get done, whatever is not being adequately handled for group needs' (McGrath, 1962, p. 5). Within this approach, leaders are responsible for identifying problems and generating and implementing solutions (Zaccaro et al., 2001). Zaccaro and colleagues identify three critical distinctions between functional leadership and other models of team–leader interactions. First, they note that functional leadership emphasizes that leadership is a boundary role linking teams to their environment. Leaders must interpret and define the events in the team's environment. Second, leadership functions are necessitated by the fact that there are team problems. Third, functional leadership is not defined by a specific set of behaviors, but by any behavior that assists the team in problem solving.

Using the functional approach as their conceptual basis, Zaccaro et al. (2001) developed a framework that argues leadership influences team effectiveness via the effect on team processes (i.e., cognitive, motivational, affective, and coordination). The specific leader functions highlighted as having an impact on these team processes are (1) information search and structuring, (2) information use in problem solving, (3) managing personnel resources, and (4) managing material resources. For example, leaders impact cognition by instilling an understanding of the mission in members and each person's contribution to performance. Leaders impact motivational processes directly by the motivational strategies that are practiced, and indirectly through their planning, coordinating, personnel development, and feedback behaviors. In addition to impacting motivation, leaders manage the climate of the team in order to control conflict and set team norms. Finally, leaders influence team coordination by developing the team's awareness of what resources are available to the team, offering clear task strategies, monitoring environmental changes, and providing developmental and goal-orientated feedback to the team.

Similar in its emphasis, Hackman (2002) argued that leaders create enabling conditions for effective team performance. Team leaders should ensure that the team has clear boundaries, membership stability over a defined time frame, a compelling direction, an enabling structure, a supportive organizational context, and expert coaching. Coaching serves to build and maintain team coherence (i.e., shared behavior, affect, and cognition) and has three targets (effort, strategy, education) whose functionality varies based on the team's developmental stage (Hackman & Wageman, 2005). Coaching that focuses on effort and fosters motivation is most functional early in the team's life span, so as to build shared commitment. At the midpoint of the team's life span, consultative coaching that focuses on performance strategy, emphasizing the alignment between task strategies and requirements, is most functional. Finally, coaching that focuses on education and development is most functional at task completion.

Building off earlier work, Wageman, Hackman, and Lehman (2005) examined the amount of attention leaders gave to:

- coaching individual team members in order to strengthen their personal contributions to the team
- structuring the team, and task, and establishing its purpose arranging team resources and removing organizational roadblocks
- facilitating members, using their collective resources

Results indicated that behaviors which received the most attention were those related to structuring the team and task and establishing its purpose, followed by those pertaining to the arrangement of resources and mitigation of roadblocks.

Extending work on team leadership in terms of the leader's developmental role is work by Kozlowski and colleagues (Kozlowski, Gully, McHugh, Salas, & Cannon-Bowers, 1996; Kozlowski, Gully, Nason, & Smith, 1999; Kozlowski et al., 2009). Kozlowski et al. (2009) provides a prescriptive meta-theory which argues that effective leaders engage in task and developmental dynamics. Building on prior work (Marks, Mathieu, & Zaccaro, 2001), it is argued that teams engage in a three-phase cycle of preparation, action, and reflection. During preparation phases where workload is low, the focus is on setting developmental goals which build task and social capabilities and direct member resources. As workload increases during the action phase, the leader monitors and develops team coherence, thereby facilitating coordination and adaptation. Often the workload present during the action phase will cause coherence to degrade. Leaders must be cognizant of this and be prepared to intervene to facilitate the recovery of coherence by updating situation assessments, adjusting strategy,

prompting coordination, and similar activities (Kozlowski et al., 2009). Finally, toward the end of the task cycle, leaders should facilitate reflection and regulatory activities to facilitate learning.

In terms of how the leader facilitates the developmental needs of members, Kozlowski et al. (2009) argued that each task engagement cycle serves as an opportunity to move members along a developmental continuum ranging from novice to adaptive expert. For example, the goals set during the preparation phase shift from individual level to team level as members progress through task engagement cycles. When monitoring team coherence during action phases it is expected that leaders will be required to intervene more in early development stages, whereas later stages will be characterized by boundary spanning (Kozlowski et al., 2009). Finally, with regard to reflection phases and as the team matures, the leader adapts his regulatory and feedback focus from an individual to a team level. For more details on the specific action strategies cross-walked with task cycle and developmental stage, the reader is referred to Kozlowski et al. (2009).

As seen above, team leaders have been argued to engage in many different kinds of behaviors to foster team effectiveness. Burke et al. (2006) conducted a meta-analysis to begin to examine the relationship between leadership behaviors and behaviorally-based team performance outcomes. Burke et al. defined task-focused behaviors as 'those that facilitate understanding task requirements, operating procedures, and acquiring task information' (p. 291), whereas person-focused behaviors were 'those that facilitate the behavioral interactions, cognitive structures and attitudes that must be developed before members can work effectively as a team' (p. 291). Results indicated that the use of both task- and person-focused behaviors was related to perceived team effectiveness and productivity, with person-focused behaviors explaining more variance. Person-focused behaviors were also related to team learning. Boundary spanning and empowerment behaviors were found to explain large amounts of variance in perceived team effectiveness and productivity (24% and 22%, respectively). Moreover, all empowerment behaviors explained moderately high amounts of variance in team learning (31%). For more information on the behaviors contained within each category the reader is referred to Burke et al. (2006).

Virtual team leadership

While co-located teams have received the bulk of the attention with regards to team leadership, an interest in virtual team leadership is on the rise. Virtual teams have been described as, 'teams whose members use technology to varying degrees in working across locational, temporal, and relational boundaries to accomplish an interdependent task' (Martins, Gilson, & Maynard, 2004, p. 808). Researchers have sought to understand the benefits and challenges inherent within virtual teams and, in doing so, leadership in virtual teams has received some attention (Avolio & Kahai, 2003; Avolio, Kahai, & Dodge, 2001; Tyran, Tyran, & Shepherd, 2003). Offering insight into the role team leaders occupy within virtual teams, Weisband (2002) found that effective project leaders initiated task demands and showed consideration of others early in the team's life span. Purvanova and Bono (2009) reported that transformational leadership behaviors were more effective in virtual teams than in face-to-face teams and that there was considerable variability in leader behaviors across the two team types.

Despite the prevalence of interest in the topic of virtual teams, researchers have argued that the predominant amount of work has been descriptive, reporting the benefits and detriments of virtual teams. Very little is known about how virtuality impacts the type, form, function, and behaviors required of team leaders (Powell, Piccoli, & Ives, 2004). As such, there has been sparse development of context-specific leadership frameworks that apply only to virtual teams (for an exception, see Avolio et al., 2001). However, Bell and Kozlowski (2002) provide a virtual team typology that may facilitate understanding regarding the leadership functions and behaviors required. The typology argues for a continuum of virtualness, varying along the following dimensions: spatial and temporal distribution, communication modality, boundary spanning, life cycle, and member roles.

These characteristics of virtual teams, in turn, have an impact on the motivational, affective, and cognitive processes that team leaders need to promote to manage team performance and develop the team. The development of shared coherence within virtual teams is especially important as it is argued that virtual team leadership functions are best distributed throughout the team (Hertel, Geister, & Konradt, 2005; Johnson, Suriya, Won Yoon, Berrett, & LaFleur, 2002). Shared coherence can facilitate members having the motivation and willingness to engage such leadership functions. The impact on each of these processes is now briefly discussed.

Motivation
A critical component of team effectiveness is the motivation to work toward accomplishing the

team goal. This motivation is largely driven from cohesion, collective efficacy, and trust among team members (Zaccaro, Ardison, & Orvis, 2004; Zaccaro et al., 2001). In virtual teams leaders face challenges in influencing these motivational processes based on the permanence of the team's tenure, percentage of face-to-face interaction, and access to sophisticated technology used for communication (Zaccaro et al., 2004). For example, distribution often results in members having very little contact; thus, it is more difficult to build trust (Creighton & Adams, 1998; Furst, Blackburn, & Rosen, 1999). The short life span of many virtual teams also contributes to difficulties in building trust, as it is harder for members to gain the knowledge and shared experiences required for trust development (Zaccaro et al., 2004).

To mitigate the challenges in building trust and related constructs, such as cohesion, leaders should facilitate swift trust (Zaccaro et al., 2004). Swift trust has less of an emphasis on feeling, commitment, and exchange and more on action and absorption in the task (Meyerson, Weick, & Kramer, 1996). This type of trust is most easily facilitated when members have clearly defined roles, responsibilities, and expectations (Meyerson et al., 1996). To further combat the challenges to building trust and information exchange, leaders can employ communication technologies (Hedlund, Ilgen, & Hollenbeck, 1998; Mittleman & Briggs, 1999).

Affect

Positive affect is also important for leaders to promote within virtual teams, but has received little attention (Zaccaro et al., 2001). Research on the affective challenges within virtual teams has argued that team dispersion makes it difficult to detect conflict and rifts among members, and thus more difficult for a leader to manage a virtual team. Communication between members who are both geographically and temporally dispersed is heavily reliant on non-verbal-technology-mediated communication, which often creates frustration for leaders and members. Non-verbal communication, can also be a large source of misinterpretation, as assumptions are often made regarding the tone of the sender. Faulty assumptions often causes rifts between members, thereby reducing coordination and motivation. Developing team alignment and commitment to a common purpose may mitigate some of the affect challenges experienced by virtual teams (Kerber & Buono, 2004).

Cognition

Finally, compatible knowledge structures that promote the utilization of unique and shared knowledge and information about resources that each member holds have been shown to be important within teams. Developing a good understanding of who knows what is highly dependent on shared experiences and a common context (Hollingshead, 1998), yet within virtual teams these things are often underdeveloped. Griffith and Neale (2001) suggested that dispersion can lead to difficulties in establishing transactive memory. Specifically, the distance between members causes less awareness of cues signaling distinct perspectives; thereby leading to a false sense of agreement. Given the central position and member access that leaders have, Zaccaro and colleagues (2004) argue that virtual team leaders should actively facilitate the exchange, encoding, and storage of team information. In addition to facilitating information exchange, virtual team leaders must clearly define the team's objective, facilitate team members' understanding of their responsibilities, and create explicit structures that help the team manage its performance (Bell & Kozlowski, 2002).

Summary

Whereas the area of virtual teams is one that has garnered much research within the last 10 years, the area of virtual team leadership is a younger endeavor. Although work has indicated the challenges that face the leaders of virtual teams, there has been little prescriptive guidance put forth regarding how leaders can mitigate these challenges (Hertel et al., 2005; see Martins et al., 2004; Powell et al., 2004). The development of non-traditional forms of trust, fostering a socio-emotional focus in initial meetings, appropriately matching technology to situations, use of transformational behaviors, and the distribution of the leadership functions throughout the team, have all been put forth as mechanisms through which leaders can increase virtual team effectiveness. However, an antecedent to virtual team effectiveness is the ability to engage in metacognitive activities. There is a need to self-regulate and adjust at both an individual and team level, as traditional forms of feedback may be absent, or at a minimum delayed, due to spatial and temporal distribution.

Distributed/Shared team leadership

Gibb (1954) stated that 'Leadership is probably best conceived as a group quality, as a set of functions which must be carried out by the group' (p. 884). While the notion of leadership

being shared among individuals in collectives is not new, its focused study is a relatively new phenomena. The predominant amount of work that has been conducted on the leadership of collectives examines leadership as a vertical influence process; although important, this is only one type of leadership. In the complex environments of the twenty-first century it is often impossible for one individual to have the requisite knowledge and skill to successfully enact vertical leadership to the exclusion of other forms of leadership. Others have also acknowledged that the sharing of leadership and responsibility within organizations is critical to survival (Merkens & Spencer, 1998). Work on shared leadership recognizes the complexity present within organizational settings and relies on the underlying tenet that 'those who are doing the job are [often] in the best position to improve it' (Jackson, 2000, p. 16). This form of leadership has been argued to be most useful when tasks are interdependent and complex and less appropriate, due to the time required to build shared leadership competencies, with teams in the early stages of development or performing a task under time urgency (Pearce, 2004).

So what does it mean to share leadership? Several conceptualizations have been put forth, but the common theme running throughout is the sharing of the leadership responsibilities throughout the team (see Carson, Tesluk, & Marrone, 2007; Jackson, 2000; Lambert, 2002; Pearce & Conger, 2003); this does not negate vertical leadership. What seems to differ among the various conceptualizations is the manner in which the responsibilities are shared and the exact nature of what constitutes 'leadership'. For example, some researchers explicitly view shared leadership as an emergent phenomenon that occurs within the team (Day, Gronn, & Salas, 2004—leadership capacity), whereas others do not disallow that shared leadership can be formally prescribed (Pearce & Sims, 2002). In relation to form is the argument that shared leadership is the 'serial emergence of multiple leaders over the lifespan of the team' (Pearce & Sims, 2002, p. 176) as compared to the notion of co-leadership. In a similar notion, Day et al. (2004) discussed leadership capacity as a form of shared leadership conceptualized as an emergent state, whereby social capital is built within the team. As with the broader leadership literature, there have been a variety of leadership behaviors and/or functions which have been argued to comprise the content of shared leadership. Within the next section a few of the more prominent models and frameworks are described.

In beginning to delineate the nomological net that surrounds shared leadership, researchers have put forth several models and frameworks.

Some of the most concentrated work in this area has been done by Pearce and colleagues. Perry, Pearce, and Sims (1999) developed a model of shared leadership which encompasses such behaviors as transactional, transformational, directive, empowering, and social supportive behaviors. The model argues that when the team engages in such behaviors, valued affective (e.g., commitment, satisfaction, potency, cohesiveness), cognitive, and behavioral (e.g., effort, communication, citizenship behavior) outcomes result. In turn, these outcomes result in qualitative and quantitative markers of team effectiveness. Further extending this work, Ensley, Pearson, and Pearce (2003) developed a model that examined the role of shared leadership in promoting key affective and behavioral components related to team effectiveness and moderating variables. In the model, shared leadership is related to the development of cohesion and shared vision, which in turn are related to team effectiveness. The model also specified contextual variables (i.e., time, resource constraints, risk, and ambiguity) that may moderate the relationship(s) between shared leadership and cohesion and shared vision, respectively.

Other researchers while not specifying true models or frameworks have delineated competencies argued to foster shared leadership. Lambert (2002) argued for the following competency abilities: negotiate win–win solutions through team learning, influence follower behavior, solve problems within a systems framework, and use shared visioning to empower members. Similarly, Carson and Tesluk (2007) examined literature on role theory and extracted four roles (i.e., navigator, engineer, social integrator, and liaison) around which there seems to be much convergence in terms of their utility to team members without formal title or position authority, as is often the case with shared leadership. When these roles are enacted within the team, the following functions are accomplished:

- establishment of team direction and purpose (navigator)
- structuring of team form, roles, functions, and responsibilities (engineer)
- development and maintenance of team coherence (social integrator)
- development of relationships with key external stakeholders (liaison)

Carson and Tesluk (2007) found that shared leadership, as conceptualized by the above behaviors, was positively related to performance; however, role differentiation with respect to these behaviors, was negatively related to shared leadership. Consequently, the authors hypothesize that shared

leadership reflects not a pattern of highly differentiated roles, but several members adapting and exercising more than one leadership role, as the situation dictates.

Moving past models and frameworks, researchers have also delineated the conditions which may affect the emergence of shared leadership. Pearce, Perry, and Sims (2001) identify five conditions: geographic dispersion, demographic heterogeneity, large team size, skill heterogeneity, and maturity. The first three conditions are expected to negatively impact the emergence of shared leadership, whereas skill heterogeneity should have a positive effect. Teams with breadth in their abilities are more likely to be positioned to effectively engage in shared leadership, given the right climate and members who are comfortable with and cognizant of the possession of different skills.

The vertical leader can play a key role in creating the conditions for the emergence of shared leadership. Perry et al. (1999) argue that both the vertical leader and team characteristics are important in creating the conditions for shared leadership. Within this framework the vertical leader ensures the team has an enabling design, boundary management functions are enacted, and facilitative and contingent leadership behaviors are present. Pearce (2004) argues that in addition to the vertical leader developing shared leadership, the organizational context (i.e., training, development, and reward systems) can facilitate emergence.

Research has begun to examine many of the ideas put forth regarding shared leadership, but much remains to be done. Empirical work has predominantly investigated the components of shared leadership and its relation to performance. In empirical research, shared leadership has typically been examined in terms of transactional, transformational, aversive, directive, and empowering behaviors. Results indicate that shared leadership has a positive relationship with performance across a number of domains (e.g., selling teams, consulting teams, top management teams, entrepreneurial teams) and often accounts for more variance than vertical leadership (Ensley, Hmieleski, & Pearce, 2006; Pearce, 2004; Pearce & Sims, 2002).

Less research has focused on shared leadership's relation to process or emergent states. Initial research has suggested that when shared leadership is present teams engage in greater amounts of collaboration, coordination, and cooperation (Manz & Sims, 1993; Yeatts & Hyten, 1998). Some researchers have examined the impact of culture on the tendency to engage in shared leadership behaviors. For example, Hiller, Day, and Vance (2006) found that the tendency to engage in shared leadership was culturally dependent; it was positively related to the level of team members' collectivism, but not to power distance.

Summary

The notion of shared or distributed leadership is not a new concept, although it has recently witnessed a reemergence within the team leadership literatures. The construct itself is still fairly messy as some refer to shared leadership as co-leadership, whereas others define it as the leadership role or function switching between members based on needs and capabilities. Although in many instances this form of leadership has been shown to be more predictive of performance than traditional vertical leadership, most of the work has examined behaviors most typically found in traditional leadership research (i.e., transformational, transactional, empowerment). There have also been propositions set forth regarding the conditions under which shared leadership is most likely to emerge, but little of this work has been tested, nor is there much attention paid to team process; most studies examine the link between shared leadership and outcomes.

Leadership of multiteam systems

A second emerging area which has a shorter history than the work on shared leadership is that on the leadership of networks of teams (i.e., multiteam systems). Multiteam systems (MTSs) have been defined as (Mathieu, Marks, & Zaccaro, 2001, p. 290):

Two or more teams that interface directly and interdependently in response to environmental contingencies toward the accomplishment of collective goals. MTS boundaries are defined by virtue of the fact that all teams within the system, while pursuing different proximal goals, share at least one common distal goal; and in so doing exhibit input, process, and outcome interdependence with at least one other team in the system.

DeChurch and Mathieu (2009) argued that MTSs are primarily defined by the interdependence between the teams that comprise the system, not by the location of the component teams (i.e., within or across organizations). This interdependence, in turn, creates goal hierarchies which serve to guide action within and across teams comprising the system.

These types of functional units occur in government, military, private, and public sectors. For example, a firefighting MTS might consist of fire suppression, ventilation, and search and rescue teams. In disaster relief efforts, MTSs can take many forms, one of which may be local EMT/rescue teams working with Red Cross medical teams, and military extraction teams. In organizations, an MTS developing a new product would require marketing, research and development, and manufacturing teams to work together.

Researchers have begun to delineate the antecedents, processes, and emergent states which are essential to MTS performance (DeChurch & Mathieu, 2009; Marks, DeChurch, Mathieu, Panzer, & Alonso, 2005). As work on MTS is in its infancy, there are few frameworks which delineate the role of leaders in MTSs. One of the exceptions (DeChurch & Marks, 2006) combines functional leadership with recent work in team process theory to delineate the role of leaders in MTSs. Extracting from functional leadership it is argued that effective leaders shape the processes which occur during taskwork. Taskwork itself is viewed as a reciprocal process that alternates between transition (i.e., evaluation and planning) and action phases (i.e., behavioral engagement which contributes directly to goal attainment) (Marks et al., 2001). DeChurch and Marks (2006) argue that during transition phases the leader engages in and facilitates mission analysis, goal specification, and strategy formulation. Conversely, during action phases the leader focuses on ensuring goal progress is being monitored, systems and team monitoring, and coordination.

In comparing this form of leadership to traditional team leadership it is not the actions of the leader which differ, but the target of those actions and corresponding challenges (DeChurch & Marks, 2006). For example, MTS leaders must be able to negotiate leadership when there are both horizontal and vertical forms of leadership present. Leaders must also be able to manage the temporal alignments and maintain coherence not only within a single component team but also across component teams (i.e., at the system level) whose goal hierarchies are highly coupled (DeChurch & Marks, 2006). Empirical work conducted in the laboratory using a computer simulation has suggested that MTS leaders can facilitate cross-team alignment by engaging in strategy development and coordinating behavior which take into account the interdependencies within the system.

Moving outside the laboratory, Browning (1998) utilized a case study approach to examine MTSs. Whereas the focus of this case study is not explicitly tied to leadership, but on identifying the mechanisms used to coordinate across teams, this is an activity that would conceptually fall under the realm of leadership activities. Findings suggested nine coordination mechanisms. Activities such as systems engineering and interface optimization, improved information and communication technologies, co-location, training, and town meetings were all identified as things that leaders could do to enable coordination. Once coordination was established, results suggested that mediation, interface management groups, integration teams, interface contracts, and scorecards could be used to maintain coordination.

Also investigating MTSs in the field, DeChurch, Burke, Shuffler, Lyons, Doty, and Salas (in press) sought to identify coordination mechanisms utilized by leaders. Using a qualitative approach, historiometric (Simonton, 2003) analysis, a series of historical events were identified that involved mission critical MTSs. Results indicated that leadership actions were focused at three levels: leaders must engage in and shape processes *within single component teams*, at the *interface of multiple component teams* whose goal hierarchies intersect within the system, and at the *boundary between the system and external constituencies*.

Results also indicated that leaders coordinated through the use of strategy-focused behaviors occurring within transition phases as well as real-time coordinating mechanisms. Strategy-focused behaviors included analyzing the situation, designing the role structure of the MTS, planning, and taking initiative. Conversely, coordination-focused activities included reactive/adaptive unity of command, orchestrating actions, and managing the flow of information. These results bolster the findings emerging from the laboratory (specifically the findings from DeChurch & Marks, 2006) as well as identifying a more focused set of functions, and subtasks, of leader behaviors and the level at which they most often occurred (see DeChurch et al., in press for more details).

Summary

Work in the area of MTS leadership is in its infancy; the MTS construct itself is still being shaped and refined. However, there has been a small set of researchers who have been pushing the envelope in this area and the concept appears to be gaining traction. Research in this area has begun to show the importance of MTS leaders maintaining a dual focus with regards to performance management and developmental activities. Several challenges to MTS leadership have been put forth (e.g., maintaining temporal alignment,

negotiating horizontal and vertical leadership, managing multiple competing goals across levels), but research is only beginning to examine exactly how the challenges are to be mitigated and the areas in which MTS leadership is truly distinct from the broader team leadership literature.

METHODOLOGIES EMPLOYED IN THE STUDY OF TEAM LEADERSHIP RESEARCH

In studying team leadership, researchers have typically used a fairly narrow set of methodologies; thus, there are many methodological similarities across the domain. These cross-cutting methodologies are briefly described, followed by a discussion of some of the unique methodologies used in specific areas of team leadership research.

Cross-cutting methodologies

Both laboratory and field-based methodologies are employed in studying team leadership; however, field-based methods dominate, especially with regards to virtual and shared team leadership. Both methodologies have their critics. Laboratory methodologies are often criticized in terms of the external validity of the results and field methods for collecting convenience data. The methodologies used tend to be predominantly survey-based, but are often augmented with observational techniques. Members are asked to assess their leader in order to determine the behaviors exhibited and the degree to which behaviors are valued and/or effective. Given the heavy reliance on one methodology, there is a threat of mono-method bias and a chance that the full picture regarding a topic will not emerge, as different methodologies often provide differential information about the same problem.

Researchers need to move beyond survey and observational techniques to the use of multi-method toolkits. An emerging method in this regard is the use of narrative. Narrative is a term that is used to apply to the following research strategies: biography, autobiography, life writing, personal accounts, narrative interviews, personal documents, life stories or histories whether written or oral, ethno-history and -biographies (Danzig, 1999). One application of this methodology is collecting leadership stories from personal interviews. Danzig (1997, 1999) describes the process as follows: an interview protocol is created in which the interviewees are prompted to talk about their own personal biographies. This is followed by prompting them to discuss a specific problem or situation (background, process, and outcome) in which they occupied a leadership role. The data are then crafted into a story using the leader's actual words and reviewed for accuracy. These stories are then used to extract critical themes or behaviors. This methodology can provide unique insights into team leadership and obtain unconstrained, specific, contextual, and dynamic information on events and organizational issues, not captured in surveys.

Targeted methodologies

Virtual team leadership
Typically, the same methodologies used in the wider literature on virtual teams are seen in research on virtual team leadership. Both laboratory and field-based methodologies are employed, with laboratory studies predominantly utilizing computer-mediated discussions and simulations to mimic the virtual distributed environment. Conversely, research in the field examines teams embedded within organizations (e.g., global virtual teams), as well as teams specifically created for the study (e.g., student virtual teams; for examples, see Jehn & Mannix, 2001; Johnson, et al., 2002).

Mixed methodologies where both quantitative and qualitative methods of inquiry are used to capture the dynamic and virtual interactions within groups are common. In this vein, surveys are used to collect data on team processes, technology use, and perceptions of team effectiveness. The technology inherently involved in virtual teams facilitates more technologically orientated capture methods as compared to team leadership research outside of virtual teams. Data captured tends to be more digital and may be asynchronous. Various communication technologies (e.g., emails, chats, discussion board postings) are often analyzed to determine the type of information team members are communicating, the purpose of communication, how information is interpreted when using computer-mediated technology, and the knowledge networks that emerge.

Shared team leadership
A predominant number of shared leadership studies are conducted in field environments where shared leadership is often operationalized as the degree to which members perceive that leadership behavior 'x' is shared. Studies tend to employ surveys and research designs that preclude causation. Whereas most surveys employ typical Likert scales, the studies examining both vertical and

shared leadership modify the typical survey format to a double format (see Ensley et al., 2006). In this format participants answer questions with both referents (vertical leader, shared leader) side by side. Additionally, a few researchers have used case study methodologies (Denis, Lamothe, & Langley, 2001). Potentially, the most novel methodology which appears is the application of social network analysis to examine shared leadership. Mehra, Smith, Dixon, and Robertson (2006) applied social network analysis to the examination of vertical and horizontal leadership, thereby providing a more concise picture of the pattern of leadership dispersion.

MTS leadership

Although the bulk of the MTS work is conceptual, a good deal of methodological variation exists in empirical work. Existing studies reflect a combination of research conducted in laboratory settings designed to simulate the essential characteristics of MTSs and research conducted in context. Within the laboratory it is common to use a scaled world, synthetic task, or commercial off-the-shelf (COTS) game as the task environment; however, one must ensure that the critical characteristics can be modeled by the system. Marks, Mathieu, and Zaccaro (2004) have argued that such environments must be able to model inter-team interdependence, goal hierarchies, challenging and dynamic environments, and an episodic focus on performance. Using these criteria and others drawn from the MTS literature, Burke, Wooten, Salas, and DeChurch (2009) critically examined COTS environments to assess their applicability for use as MTS testbeds. Findings suggested that with little or no modification the following could be used: C3Fire, ELICIT, Incident Commander, Networked Fire Chief, PLATT+, Reactive Planning Strategies Simulation, Situational Authorable Behavior Research Environment, Steel Beasts Pro, and World in Conflict. Others were found to be relevant, but may require greater modification (for more information, see Burke et al., 2009).

To a great extent, the methods that have been traditionally used in team research have been extended and used within laboratory studies of MTSs. It is common to see the use of Likert-type questionnaires, observational protocols, communication logs, video/audio recording, and system-collected data. While questionnaires, communication logs, video/audio recordings, and observations are commonly used to capture the processes, system-collected data is most often, but not always, reflective of performance outcomes.

In addition to the above methods, Marks et al. (2005) utilized interviews within a laboratory setting to gather data on MTS-level transition processes.

Augmenting the methodologies traditionally used in laboratory studies are those employed when studying MTSs in context. In examining MTSs in context, researchers have used observations and interviews to comprise case studies of MTSs as well as the examination of archived historical documents combined with critical incident extraction and thematic analysis via card-sorting methodologies (DeChurch et al., in press). Finally, to a lesser extent, NASH simulation strategies have been used to examine MTS-related questions (Liu & Simaan, 2004; Liu, Simaan, & Cruz, 2003).

MOVING FORWARD: A RESEARCH AGENDA

Within the last decade research that examines team leadership has begun to flourish. However, most of the work has extended traditional leadership theories to the areas of teams, neglecting the unique role of leaders in teams. Team leaders are heavily engaged in developing and maintaining the shared cognition, behavior, and affect that facilitates a response to dynamic task and developmental contingencies. Within team leadership there is a tremendous focus on process, which is missing from the more traditional leadership literature, and how synergy can be maximized within the team. Therefore, in moving forward one of the first priorities is the need to examine the factors which have been argued to make team leadership different to the leadership of individuals or organizations (see Kozlowski et al., 2009).

A second area that needs concentrated effort is related to how team composition impacts leader requirements. Team leaders are increasingly leading global teams as well as teams with cross functional or organizational boundaries. The manner in which team leaders can mitigate the initial negative effects that diversity often has on process is sorely lacking. Potential questions include:

- How can leaders capitalize on the synergy diversity can provide?
- How do leaders negotiate a shared reality among members who have different beliefs, values, and expectations?
- Do the mechanisms that leaders use to facilitate team coherence within homogeneous teams work in teams who are culturally and functionally diverse or do they need to be adapted, and if so, how?

Recent articles that explicate the different forms that diversity may take may provide guidance in this area (see Harrison & Klein, 2007).

Context and time are two other areas in which future research could concentrate. It has been argued that team leadership varies with context (Kozlowski et al., 2009). However, team leadership researchers often do not consider context as a key variable, treating it more as a factor to control. However, the field is beginning to take note of the importance of context as several journals have recently devoted entire issues to topics pertaining to leadership in extreme contexts. Researchers should consider how extreme contexts, as well as other mission essential contexts, change the functionality of different leader behaviors in promoting team coherence. How does context impact the development, loss, and regaining of trust? How does it impact what the leader must do to facilitate adaptation? Finally, with regard to time, there is a considerable gap in examining the impact of leadership on teams over time. Processes such as team learning and team adaptation can only be effectively examined over time. Research is needed to uncover which leadership behaviors are most effective at developing adaptable teams. Research examining how leaders can develop team learning through behaviors which develop a learning climate, promote the use and development of learning tools, and represent members as learning partners is also needed (see Zaccaro, Ely, & Shuffler, 2008).

A final cross-cutting area pertains to measurement and methodology. There needs to be a push for the use of multi-method strategies and innovative thinking such that instruments go beyond the typical subjective survey item. As the focus is *team* leadership, more attention needs to focus on how constructs emerge across levels (see Klein & Kozlowski, 2000) as well as data indexing (see Smith-Jentsch, 2009). Whereas above we have delineated areas of future research that are cross-cutting, we next highlight a few needs that are targeted with respect to a specific leadership type.

Virtual team leadership

The literature on the role of the leader in virtual teams is not as well developed as that on the leadership of co-located teams. There is still a fair amount of controversy over the degree to which virtual teams are actually a distinct team form or whether all teams have some degree of virtuality. Therefore, one of the first streams of research should be to investigate how, or if, truly different leader behaviors are required in this context. In this vein, how leader requirements change

based on degree of virtuality is an important area of research. Research that effectively examines the role that technology plays in the leader–team dynamic would also be informative. Specifically, what kind of technology is most effective and when? How does this technology change the way that leaders and teams interact in order to interpret, share, and disseminate information?

Empirical research on virtual team affective processes is also limited. Given the context many virtual teams operate in, research can provide answers to questions such as what can a leader do to minimize or manage conflict? Gaining a greater understanding of these processes has implications for how to lead virtual teams. In summary, we place a call to researchers to examine virtual teams and their uniqueness. Rather than comparing the leadership between co-located and virtual teams, we feel it is critical to start examining what is uniquely or similarly appropriate for virtual teams.

Additionally, several researchers have argued that within virtual teams the leadership function is best distributed throughout the team. This proposition, in and of itself, needs to be empirically validated. If shared leadership is indeed the most effective form of leadership within virtual teams, the next question pertains to the exact leadership functions that need to be distributed. What functions and corresponding behaviors remain in the purview of the leader and what are distributed throughout the team. Finally, investigation is needed of how leadership capacity (see Day et al., 2004) is developed within virtual teams.

Shared team leadership

Although the initial research on shared leadership has been promising, there is much that remains to be investigated. A few of the more prominent areas in need of research include, but are not limited to, examination of process, time, and measurement. Perhaps one of the first areas within shared leadership that could use focused research is the examination of how shared leadership impacts team process. Most of the work focuses on the relationship between shared leadership and team outcomes, with little attention on process. However, within the broader team literature base, knowledge about process has been shown to be instrumental in terms of effective team performance, training, and feedback.

In seeking to understand the impact of shared leadership on team process, research should also investigate the relationship between shared and vertical leadership. As these two forms of leadership have been argued to potentially coexist, how do contextual factors and degree of interdependence impact the appropriate mix of these two forms

of leadership? A few studies have examined both forms of leadership, but problems with degrees of freedom and multicollinearity have prevented researchers from examining their interaction.

Additionally, although shared leadership researchers have noted the importance of time, little work has been done in this area. Barry (1991) has argued for the importance of understanding how shared leadership, and the behaviors contained within, might differentially impact the team based on the team's developmental stage. A similar question pertains to examining how shared leadership might evolve over the life span of the team. Along these lines, Carson and Tesluk (2007) argue for the use of growth modeling and network analysis to examine how the roles embedded within shared leadership change across time and, in turn, relate to team performance.

Multiteam system leadership

As the work on MTS is perhaps the youngest, there is a tremendous potential for growth in this area. Perhaps the greatest need is to begin to explicate whether MTS leadership requires something fundamentally different from that which is required when leading a single team or if it is solely a matter of different leadership targets and increased complexity. Other areas that might be investigated relate to:

- How do leaders manage the temporal alignment and coordination when entrainment cycles differ across the system?
- What is the interaction between the vertical and horizontal leadership that often appears in networks of teams?
- What is required of the leader to manage and develop the cross-functional and/or cross-organizational nature of many MTSs?
- How are multiple identities managed such that they do not form a roadblock to effective process?
- Do leaders need to promote cohesion and a feeling of 'groupness' across the system?

CONCLUSIONS

There is no question that there are a great many benefits of leadership in teams (see Burke et al., 2006). These benefits include the ability of the leader to serve as a coordinator of operations, a liaison to external teams or management, and as a guide for setting the team's vision (Zaccaro & Marks, 1999). Beyond that, leaders may also facilitate a team's propensity to adapt by choosing how and when to intervene to promote regulatory

activities (e.g., Gersick & Hackman, 1990; Hackman & Wageman, 2005).

Stagl, Salas, and Burke (2007) conducted a critical analysis of the existing literature on team leadership and delineated 20 evidence-based best practices, which are organized based on Hackman's (2002) work. With regards to creating a real team, leaders should (a) define and create interdependencies, (b) reinforce task interdependencies with congruent goals and feedback, (c) clarify member responsibility and outcome accountability, (d) specify the team's decision-making authority, and (e) facilitate the use of intact teams. To create compelling direction (see Hackman, 2002), leaders should (a) exercise authority to establish compelling direction, (b) challenge the status quo to stimulate and inspire members, (c) highlight a common mission to instill collective aspirations, and (d) fully engage member capabilities by providing consequential directions. Best practices that relate to the third enabling condition, provision of enabling structure, include (a) promoting self-goal setting, self-observation, and self-reward, (b) establishing norms for how the team scans its environment, reacts to findings, and implements action, and (c) allocating the optimal number and mix of personnel. Best practices with respect to Hackman's (2002) fourth enabling condition, a supportive organizational context, include (a) implementing team-based performance-contingent rewards, (b) institutionalizing a multitiered reward system, (c) ensuring information is performance targeted, (d) negotiating access to sensitive information when needed in the development and selection of performance strategies, and (e) providing and securing developmental opportunities. Finally, best practices related to the last enabling condition, expert coaching, include (a) building shared coherence through the use of pre-briefings, (b) offering novel task performance strategies, and (c) engaging in reciprocal discussion of lessons learned and developing action plans for the implementation of lessons learned to future endeavors.

This work has been extended within a recent review article (Morgeson, DeRue, & Karam, 2010) on team leadership which delineates four sources of team leadership (internal, external, formal, and informal) and articulates a set of team leadership functions. Morgeson and colleagues focus on the processes within a team and use a functional lens to delineate the specific behaviors that leaders engage in during the transition and action phases of the team process (see Table 25.1 for a summary of the behaviors).

As can be seen within the chapter, team leadership is a complex, multilevel, and cyclical process that takes many different forms. We have sought to provide a brief discussion of the major

Table 25.1   Leadership functions

Transition phase	Action phase
Compose team	Monitor team
Define mission	Management of team boundaries
Establish expectations and goals	Challenge team
Structure and plan	Perform team task
Train and develop team	Solve problems
Sensemaking	Provide resources
Provide feedback	Encourage team self-management
	Support social climate

Source: Adapted from Morgeson et al. (2010).

conceptual and empirical contributions to the area of team leadership, a discussion of current methodologies, and potential areas of future research. This chapter is not meant to be all-inclusive, as many of these areas are a manuscript in and of themselves, but to offer a brief highlight such that the interested reader can dig deeper within the cited sources. We hope that this serves to stimulate thought, discussion, and future research in this area. Although much work has been conducted over the last 10 years, there are many questions that remain unanswered.

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