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Chapter 10

Leadership for Global Virtual Teams: Facilitating Teamwork Processes

Dorothy R. Carter, Peter W. Seely, Joe Dagosta, Leslie A. DeChurch,
and Stephen J. Zaccaro

Two parallel trends shape the world of work today. First, due to the increasing competition and complexity of the global marketplace, organizational structures have shifted. Organizational boundaries are becoming more fluid, flatter team-based structures are becoming more common, and demand for collaboration is increasing exponentially (Kozlowski & Ilgen, 2006). In these new contexts, effective leaders are not so much managers or controllers of follower behavior, as they are *orchestrators* of collaborative interactions. In fact, an eminent team's scholar argued recently that enabling team effectiveness involves creating the "facilitating conditions within which groups chart their own courses" (Hackman, 2012, p. 428). Second, communication and information infrastructures have become increasingly sophisticated, and thus, using *global, virtually linked* teams to address important issues has become the new norm.

Global virtual teams are teams comprised of individuals from various geographic locations and/or cultural backgrounds who rely on communication technology to interact with one another to some degree (Dixon & Panteli, 2010; Kirkman, Rosen, Gibson, Tesluk, & McPherson, 2002). Leadership for global virtual teams requires a careful consideration of the interplay among team member characteristics

D.R. Carter (✉) • P.W. Seely • L.A. DeChurch, Ph.D.
School of Psychology, Georgia Institute of Technology,
654 Cherry Street, Atlanta, GA 30332-0170, USA
e-mail: dorothy.carter@gatech.edu; pseely@gatech.edu; leslie.dechurch@psych.gatech.edu

J. Dagosta
Center for Education Integrating Science, Mathematics, and Computing, Georgia
Institute of Technology, 654 Cherry Street, Atlanta, GA 30332-0170, USA
e-mail: joe.dagosta@ceismc.gatech.edu

S.J. Zaccaro, Ph.D.
Department of Psychology, George Mason University,
4400 University Drive, Fairfax, VA 22030-4422, USA
e-mail: szaccaro@gmu.edu

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(e.g., cultural backgrounds, nationalities, etc.), communication technologies, and teamwork dynamics. In this chapter, we discuss the unique challenges of leadership for global virtual teams.

As a starting point to understand leadership in global virtual teams, we consider four key developments in the science of team effectiveness as they apply to the virtual context: (a) team emergent states, (b) team phases, (c) teamwork processes, and (d) team leadership functions. *Team emergent states* are affective, cognitive, or motivational characteristics of the team as a whole that emerge and coalesce over time (Marks, Mathieu, & Zaccaro, 2001). Across decades of research, affective team states such as trust, cognitive states such as shared mental models, and motivational states such as collective efficacy have been shown consistently to predict important team outcomes (Mathieu, Maynard, Rapp, & Gilson, 2008). *Team phases* are the performance episodes (i.e., transition, action) teams cycle through repeatedly as they work toward their objectives (Marks et al., 2001). *Team processes* are the behaviors members engage in during team performance phases that enable the development of team emergent states and team outcomes (Marks et al., 2001; Ilgen, Hollenbeck, Johnson, & Jundt, 2005). Finally, *team leadership functions* are the critical leadership behaviors that help facilitate team success (Zaccaro, Rittman, & Marks, 2001; Day, Gronn, & Salas, 2004). From a functional leadership perspective, it is the leader's job to "do or get done whatever is not being handled for group needs" (McGrath, 1964, p. 5). Leadership functions help to facilitate team outcomes by encouraging optimal team emergent states and team processes across phases of team performance.

In the following, we consider the intersection of leadership and global virtual team dynamics. All teams—including those who rely heavily on communication technologies—need to develop effective team processes and appropriate cognitive, motivational, and affective emergent states. Thus, functional leadership behaviors should be directed toward facilitating these necessary states and processes (Zaccaro et al., 2001). However, emergent states require time and repeated interactions among members before emerging and coalescing at the team level (Kozlowski & Klein, 2001; Cronin, Weingart, & Todorova, 2011). In fact, it may not be feasible for team states such as trust or shared cognition to exist before members have experienced sufficient interaction with one another (Carter, Carter, & DeChurch, 2012). Thus, shaping the development of team psychological states such as trust begins by shaping the behavioral interactions among team members. For example, leaders can impact follower behavior by setting behavioral norms, providing training, or offering feedback to followers. The key to effective team leadership is to influence members' interaction processes so that *optimal emergent states* and team outcomes can be achieved (Morgeson, DeRue, & Karam, 2010; Zaccaro & DeChurch, 2012).

In this chapter we provide a roadmap for leading global virtual teams. First, we elaborate the importance of team emergent states, highlighting their relevance to team success and acknowledging that leadership is a prominent force to help facilitate their development. Second, we describe the interaction processes through which teams develop optimal emergent states and achieve their goals over time. We argue that leadership is needed that shapes team processes throughout the team

lifecycle, and thereby team emergent states and performance. In closing, we offer specific, research-based strategies to guide today's virtual team leaders in enabling optimal team processes. To illustrate these suggestions, we offer actual examples of how effective functional leadership has been manifested in global virtual teams.

Global Virtual Teams

Team-based work is an increasingly common means of accomplishing organizational tasks (Devine, Clayton, Philips, Dunford, & Melner, 1999). Work teams, defined as "groups of individuals with mutual accountability that work interdependently to solve problems or carry out work" now play a vital role in organizational effectiveness (Kirkman & Mathieu, 2005, p. 1). However, over recent decades, the nature of teamwork has become increasingly complex as members are now afforded the ability to communicate via a variety of communication technologies across geographic, cultural, and temporal boundaries (Contractor, Monge, & Leonardi, 2011). These developments have given rise to a new form of collective: the *global virtual team*.

Broadly speaking, global virtual teams are typified by two distinct characteristics: (1) the presence of members from different cultures (e.g., *global*) and (2) a reliance on communication technology to facilitate interaction (e.g., *virtual*). Given the dynamic and geographically distributed nature of teamwork in modern organizations, teams are increasingly composed of members from varying cultural backgrounds (Stahl, Makela, Zander, & Maznevski, 2010). Culture itself has been defined as "the collective programming of the mind that distinguishes the members of one human group from another" (Hofstede, 1983, p. 51). In the workplace, differences in culture often represent variations in how members view the nature of, and prefer to accomplish work. Therefore, understanding the *global* aspect of teamwork is critical for leaders.

The *virtual* aspect of global virtual teams reflects the fact that members of global teams often utilize communication technology to interact. Team scholars have investigated the relation between teams and technology use through the lens of "virtuality" (Martins, Gilson, & Maynard, 2004). Virtuality is the extent to which team members rely on and utilize communication tools to facilitate their interactions (Schweitzer & Duxbury, 2010). Theoretical work in this area supports the notion that teams can be placed along a continuum of virtuality (e.g., Gibson & Gibbs, 2006; Kirkman & Mathieu, 2005; Leenders, Engelen, & Krazter, 2003). In part, the degree to which the communication technologies teams rely on are asynchronous determines their level of virtuality. Whereas synchronous interactions occur in real time, asynchronous communication implies some time lag (Kirkman & Mathieu, 2005; Pinelle, Dyck, & Gutwin, 2003). At one extreme end of the virtuality spectrum (i.e., less virtual) teams operate in a collocated environment and rely primarily on synchronous communication technologies to facilitate their work processes. The other end of the spectrum (i.e., highly virtual) reflects teams that may never interact in a face-to-face context and rely primarily on "less personal" or "asynchronous"

communication technology, such as email or chat, to conduct work (Kirkman & Mathieu, 2005). As such, teams who are geographically distributed but rely heavily on tools such as videoconferencing, which closely mimics face-to-face interaction, might be considered “less virtual” than those who are similarly geographically distributed but rely primarily on asynchronous communication modalities. Moreover, “global virtual teams,” comprised of members that are, to some degree, geographically dispersed and culturally diverse, may rely to varying extents on virtual technologies for collaboration.

Global virtual work offers teams and organizations a variety of benefits. The global aspect of global virtual work is associated with a variety of advantages. Members from different cultures possess many unique perspectives regarding how to accomplish tasks (Stahl et al., 2010). Therefore, multicultural teams have the ability to evaluate a range of perspectives when selecting the most effective course of action. Moreover, members from different cultures have access to different resources (Mannix & Neale, 2005). Global teams may leverage these varied resource pools to facilitate teamwork.

Likewise, virtual communication tools allow organizations to assemble teams comprised of individuals with relevant expertise regardless of their geographic location, while also supporting individuals who work from home (Bell & Kozlowski, 2002). The use of communication technology in lieu of face-to-face interaction results in lower costs incurred to the organization over time, more flexible patterns of communication among team members, and the potential for more structured group discussion through the use of tools such as group discussion boards (Bergiel, Bergiel, & Balsmeier, 2008; Abad, Castella, Cuenca, & Navarro, 2002). Often, the functionality of many communication tools transcends the capabilities of face-to-face interaction. For instance, email provides an electronic repository of all correspondence, enabling instant retrieval. Thus, specific virtual tools can help facilitate particular patterns of team interaction.

Although there are many benefits to global virtual teams, there are also many challenges that accompany these complex contexts. Previous literature suggests that cultural differences among team members are associated with increased communication problems and decreased trust (Stahl et al., 2010). Multicultural teams have also demonstrated difficulties in establishing a team identity and social cohesiveness (Martins, Miliken, Wiesenfeld, & Salgado, 2003). Although high variety in perspectives may benefit team creativity, team cultural diversity has also been found to increase team conflict (Watson, Kumar, & Michaelson, 1993).

Furthermore, a high reliance on communication tools has been shown to lead to a loss of mutual understanding, which in turn, can hinder the development of team cohesion and a shared group identity (Gibson & Gibbs, 2006; Hertel, Geister, & Konradt, 2005). Virtual teams are likely to experience logistical issues arising from technological breakdowns or collaboration across multiple time zones (Olson & Olson, 2000; Bergiel et al., 2008). Finally, the distribution of information across multiple communication technologies may confuse team members if communication norms have not been established (Shachaf, 2008).

The Solution: Functional Leadership

The many challenges of global virtual teams beg the question: how can teams overcome the challenges of global virtual teamwork while reaping the potential benefits? We begin with an idea put forth by Kaiser, Hogan, and Craig (2008): “leaders are the solution to the problem of collective effort, the problem of bringing people together and combining their efforts to promote success and survival” (p. 96). Leadership can be a pivotal force for driving the success of global virtual teams.

Leadership theory offers many perspectives on the behaviors, traits, and relationships that characterize the core phenomenon of leadership. One perspective that is particularly appropriate for conceptualizing team leadership is that of functional leadership theory (McGrath, 1962; Lord, 1977). The functional approach specifies that leadership is intimately coupled with creating and sustaining systemic needs. With this view as our lens, understanding leadership functions in global virtual teams begins with a concrete understanding of what conditions leaders need to create and maintain—a general understanding of what constitutes “team effectiveness.”

Models of Team Effectiveness

Foundational work by McGrath (1964) posited that team effectiveness was best understood via the input-process-output (IPO) framework. This basic model argues that inputs such as leadership, team composition, or resources shape teamwork processes, which, in turn, shape outputs such as team performance. In other words, this model suggests that leadership (an input) impacts team outcomes by shaping the types of teamwork processes members engage in.

More recent theoretical work argues that this original model failed to account for differences in the types of factors that mediate the relationship between inputs and outputs (Ilgen et al., 2005; Marks et al., 2001; Kozlowski, Gully, Nason, & Smith, 1999). Ilgen et al. (2005) offered the input-mediator-output-input (IMOI) model that disentangles various mediators of team performance—distinguishing between classes of mechanisms such as team *emergent states* and *team processes* (Algesheimer, Dholakia, & Gurau, 2011; Marks et al., 2001). Whereas processes are the dynamic interactions that occur among group members as they work toward group goals, emergent states reflect psychological properties of the team as a whole that emerge and coalesce at the team level over time (Marks et al., 2001). Both of these classes of constructs are vital to team success. Thus, effective leadership involves facilitating both properties and processes in teams (Zaccaro et al., 2001). In the following, we list the broad objectives that team leaders need to address (i.e., team emergent states and performance). Then, we provide specific suggestions for how global virtual team leaders address these goals (i.e., by facilitating team processes).

Team Emergent States

Emergent states are cognitive, motivational, and affective properties of a collective (Kozlowski & Ilgen, 2006; Marks et al., 2001). These states describe conditions that enable and underlie team effectiveness. Across decades of research, findings consistently support the importance of all three classes of emergent states on team performance (Mathieu et al., 2008).

Cognitive emergent states refer to “the manner in which knowledge important to team functioning is mentally organized, represented, and distributed within the team” (DeChurch & Mesmer-Magnus, 2010, p. 33). Cognitive emergent states help team members anticipate other members’ actions and synchronize collective behaviors (DeChurch & Mesmer-Magnus, 2010; Kozlowski & Ilgen, 2006). Researchers have identified shared mental models and transactive memory systems as key cognitive state constructs that contribute to team’s performance (Kozlowski & Ilgen, 2006). Shared mental models reflect knowledge or understandings that members have in common. Transactive memory systems (TMS; Lewis, 2003) constitute an emergent cognitive state in teams whereby all members hold in common an understanding of the pattern of unique information that is distributed across team members (Kozlowski & Ilgen, 2006).

A recent meta-analysis finds both forms of cognition are strong predictors of team performance; though transactive memory has stronger effects than does shared cognition (DeChurch & Mesmer-Magnus, 2010). In virtual teams, we expect this difference in magnitude to be even stronger. Members of virtual teams lack a commonly shared context and the nature of their task is often to combine distinct sets of knowledge. TMSs—the shared awareness of where knowledge is located within the team—are thus a central cognitive underpinning of virtual collaboration. An accumulating body of evidence suggests that developing accurate TMS allows teams to reap the benefits of distributed expertise; TMS relates to team performance in the laboratory and in real-world organizations (e.g., Lewis, 2003; Hollingshead, 2001; Moreland, 1999). Leadership is needed to architect these knowledge structures in virtual teams. In other words, a key goal of leadership in virtual teams is to help members identify one another’s specialized expertise and understand how the constellation of members’ unique knowledge and skillsets can interweave to reach group objectives.

Motivational emergent states reflect team members’ shared beliefs about the team’s capacity to perform effectively (Kozlowski & Ilgen, 2006). Collective efficacy has been linked to performance and viability in teams (Gully, Incalcaterra, Joshi, & Beaubien, 2002). Teams with strong beliefs about their capacity exert more effort toward the task. Researchers have suggested that team efficacy emerges from interactions among team members, as well as through the development of shared cognition (Gibson, 1999). Thus, the development of collective efficacy in highly global virtual teams may be particularly challenging given the limited amount of time available for interactions among members. A key goal for virtual team leaders, therefore, is to facilitate development of collective efficacy.

Affective emergent states (e.g., trust, cohesion) are an important aspect of work in collective settings, particularly virtual collectives, as studies have linked affective states such as trust or cohesion to cooperative behavior and the sharing of knowledge (e.g., Gully, Devine, & Whitney, 2012; Mayer, Davis, & Shoorman, 1995). For example, in team settings, high levels of trust among members positively impacts team performance (Jones & George, 1998) and may encourage members to devote more attention to the task at hand and less attention to monitoring other members (Dirks, 1999). Research suggests that, in virtual settings, establishing trust immediately (e.g., swift trust) among team members is vital when navigating the dynamic and potentially uncertain nature of virtual work (Crisp & Jarvenpaa, 2013; Zolin, Hinds, Fruchter, & Levitt, 2004). The establishment of trust enables each member to accept a certain degree of vulnerability when accomplishing virtual work.

In sum, leadership of teams—and of global virtual teams in particular—involves the careful monitoring and development of team cognitive, motivational, and affective emergent states. Importantly, team emergent states can also serve as an important diagnostic of team functioning—with sudden detriments in trust or collective efficacy acting as indicators of underlying problems in the teamwork processes members are engaging in as they work together.

Team Processes: Key Antecedents of Team Emergent States and Outcomes

As opposed to the psychological properties that characterize teams (i.e., emergent states), team processes are observable interactions among team members (Marks et al., 2001). Over the course of the team task, the patterns of these interactions shape the development of shared cognitive, affective, and motivational states, and eventual team outcomes (e.g., team performance). However, some team processes are more relevant during certain periods of time than others.

In 2001, Marks et al. shifted how researchers think about time in teams. Moving away from the linear progression-based view of teams as progressing from their formation to dissolution (Tuckman, 1965), Marks et al. (2001) contended that teams could be better understood in terms of repeating performance episodes. A performance episode is a period of time that is specific to the type of team and its task; the episode is defined in terms of the team’s goals. Each episode has two distinguishable periods of activity: a *transition phase*, where members set goals, plan, and analyze, and an *action phase*, where they coordinate, monitor information, provide backup, and track goals. These phases are referred to as subepisodes of performance. Performance can be gauged at the end of each action phase.

Within this conceptualization of team performance phases, Marks et al. (2001) introduced a taxonomy of teamwork processes that are important during the transition and action phases of team performance. Marks et al. (2001) classified these team interactions as: (a) team transition processes (i.e., occurring within the transition phases), (b) team action processes (i.e., occurring within the action

phases), and (c) team interpersonal processes (i.e., occurring throughout both transition and action phases). A recent meta-analysis convincingly demonstrates that these team processes have consistent positive relationships with important team outcomes such as team performance and member satisfaction (LePine, Piccolo, Jackson, Mathieu, & Saul, 2008).

Leadership for Global Virtual Team Processes

As mentioned earlier, adopting a functional approach to understanding leadership in teams involves diagnosing team needs and then identifying how leadership can best meet those needs. Building on the notion that leadership needs to facilitate effective team processes across phases of team performance, Morgeson et al. (2010) offered a concise list of critical team leadership behaviors. In this section, we link the leadership functions identified by Morgeson et al. (2010) to the global virtual team context to depict how today's leaders can help create the conditions needed for global virtual team success (see Table 10.1 for a summary).

To better illustrate effective leadership in global virtual contexts, we provide actual examples of leadership interactions observed in a large-scale study of global virtual teams (see Table 10.2). Over the course of 12 weeks, 30 student teams worked together on a complex innovation challenge as part of their course grade. Each team was comprised of one leadership subteam and three "expert" subteams from three different areas of expertise (i.e., psychology, ecology, business). The component subteams in the global teams were located at one of three participating universities in one of two countries (United States, France). These global systems are appropriate for demonstrating the challenges of virtual leadership for at least two key reasons. First, members were geographically distributed, hailed from different cultural and national backgrounds, and had to communicate with one another using virtual collaboration tools (e.g., videoconferencing, email, etc.). Thus, all example interactions included in the current chapter reflect interactions across communication technology. Second, the leadership teams in these global systems did not have any "legitimate power" (Finkelstein, 1992) over the expert teams. In other words, members of the leadership subteams could not "fire" or "officially sanction" members of other subteams in the system. Instead, members of the leadership subteams had to rely on other modes of persuasion in order to enforce desired norms and expectations. As global virtual teams are increasingly composed of experts from around the world who are assembled based on their unique expertise to solve complex problems, leadership is becoming less about asserting one's power and more about facilitating collaboration.

In the following, for each of the phases that teams cycle through, we describe the critical leadership functions that enable effective teamwork processes. We discuss how formal leaders of highly global virtual teams might enact these functions in the virtual context and provide specific suggestions based on current literature and our example global virtual teams. These additional tips for virtual team leaders are

summarized in Table 10.1. An important caveat is that transition/action performance phases and processes may be enacted differently depending upon the cultural composition of the team. Research suggests cultural differences in the manner in which individuals subjectively experience and allocate their time (Gentry, 1991). For example, individuals from Western cultures tend to prefer to take on one task at a time and to work in a linear fashion (Hall, 1959; 1976). This orientation is consistent with the linear/cyclical nature of the transition—action performance phase

Table 10.1 Leadership functions for global virtual teams

	Team leadership functions	Additional tips for leaders of global virtual teams
Transition	" <i>Making the team</i> "	<ul style="list-style-type: none"> Capitalize on the virtual context by selecting members who are highly qualified regardless of geographic location
	• Compose team	<ul style="list-style-type: none"> Balance member expertise with team-friendly characteristics (e.g., psychological collectivism) and training (e.g., cross-cultural competencies)
	" <i>Setting the course</i> "	<ul style="list-style-type: none"> Especially during initial transition phases, clear directive leadership can help establish a compelling mission or purpose for the diverse and distributed team
	• Establish team mission	<ul style="list-style-type: none"> Establish and convey a clear and compelling vision that encourages a shared team identity across virtual boundaries
	• Set goals and expectations	<ul style="list-style-type: none"> Establish virtual "rules of engagement" by collectively creating a global virtual team charter. Facilitate discussion of differences in working styles, virtual communication tool usage, time zone differences, etc., and collective agreement on how best to accomplish the team task given specific constraints
	• Structure and plan	
	" <i>Building the skills</i> "	<ul style="list-style-type: none"> Ensure comprehensive training on the usage of virtual communication tools—tailored for the technological skill levels of team members
	• Train and develop	<ul style="list-style-type: none"> Provide additional training on the appropriate usage of virtual communication tools—richer communication tools (e.g., videoconferencing) for important planning meetings, less rich communication tools (e.g., email) for day-to-day activities Ensure comprehensive cross-cultural competence training/awareness
	" <i>Communicating</i> "	<ul style="list-style-type: none"> Leaders should be highly skilled at communicating across asynchronous communication tools (e.g., email)
	• Sensemaking/giving	<ul style="list-style-type: none"> Learn to match the message (e.g., negative feedback) to the richness of the communication platform (e.g., face-to-face vs. email)
• Feedback		

(continued)

Table 10.1 (continued)

	Team leadership functions	Additional tips for leaders of global virtual teams
Action	“Observing and questioning”	<ul style="list-style-type: none"> Streamline communication technology (e.g., all project interactions posted to a team project message board rather than email)
	<ul style="list-style-type: none"> Monitor team Challenge team 	<ul style="list-style-type: none"> Reinforce norms and expectations to enable a sense of trust among members and between leaders and followers
	“Doing the work”	<ul style="list-style-type: none"> Clarify team boundaries—these may be confusing in virtual contexts
	<ul style="list-style-type: none"> Perform team task 	<ul style="list-style-type: none"> Continuously seek information—virtual team members may be reluctant to express concerns, problems
	<ul style="list-style-type: none"> Solve problems 	<ul style="list-style-type: none"> Use project management software platforms that allow members to post status updates
	<ul style="list-style-type: none"> Provide resources Manage team boundaries 	<ul style="list-style-type: none"> Host periodic teleconference or videoconference meetings that provide a forum to discuss status updates, team needs, etc.
	Interpersonal	“Keeping it positive”
<ul style="list-style-type: none"> Support positive social climate 		<ul style="list-style-type: none"> Offer “virtual rewards” and recognition of team member successes during virtual meetings
“Encouraging information flow”		<ul style="list-style-type: none"> Foster open and unique information exchange processes, but recognize that in less virtual contexts, promote unique information sharing; whereas, in more distributed interactions, teams need leadership that enables open information sharing
<ul style="list-style-type: none"> Information sharing 		<ul style="list-style-type: none"> Shared leadership benefits virtual team performance, but face-to-face teams are more likely to develop shared leadership than are virtual teams. Therefore, formal leaders need to directly intervene by identifying opportunities to delegate leadership functions and encouraging members to monitor and self-correct
<ul style="list-style-type: none"> “Sharing the responsibility” Encourage team self-management 		

model discussed by Marks et al. (2001). However, individuals from Latin American and European cultures are less likely to adhere to strict, linear performance schedules and instead undertake multiple tasks at once (Hall, 1959; 1976). Thus, these individuals may be more comfortable accomplishing their taskwork by enacting transition and action phase behaviors simultaneously and/or over a longer period of time. Effective leaders are often those who are closely attuned to the preferences and abilities of their followers. Thus, for global virtual teams, leaders need to assess the preferences of their team and modify their leadership behaviors depending on whether transition and action processes are enacted simultaneously or sequentially (see Table 10.1 and Table 10.2).

Table 10.2 Examples of effective leader communications in global virtual teams

	Leadership behaviors	Example leader communications representing effective functional leadership
Transition	<ul style="list-style-type: none"> “Making the team” “Setting the course” “Building the skills” “Communicating” 	<ul style="list-style-type: none"> “Let’s begin a discussion topic in the project management software with an introduction discussion. This will be a venue for everyone from the various groups. Each member of our team could write a short bio introducing ourselves” “The charter will help us define our group roles and how we want to structure our...group” “Let’s start our meeting with an inspirational quote on the shared whiteboard. This will help rev up (the team) and motivate them” “I just wanted to give you guys a heads up of expectations for our next meeting” “I think if you could come up with two ideas (maybe three max) and some ideas for ways of attacking them, then in our next meeting we should all be able to discuss them and come up with a group decision” “We encourage everyone to log into the meeting at least 10 min early to ensure we can all begin on time and resolve any login issues prior to the start time” “I will rely on you both for dealing with scheduling the virtual meetings and the note-taking” “Just a reminder, when contacting all of the team members, it will be important that we follow the guidelines that we set forth in our initial team charter” “In order to prepare the team members, we have attached an agenda outlining our goals and what to expect during our first meeting”
	Action	<ul style="list-style-type: none"> “Observing and questioning” “Doing the work”

(continued)

Table 10.2 (continued)

	Leadership behaviors	Example leader communications representing effective functional leadership
Interpersonal	"Keeping it positive" "Encouraging information flow" "Sharing the responsibility"	"We (the leaders) offered to all the team members that they can meet with the leaders and help design a structure" "I am confident that we covered everything we needed to and am very excited about our progress!" "I think everyone had fabulous ideas and it was a very productive meeting" "We ask you all to try to show up at the virtual meeting and please try to communicate with the team about your progress and share your inventive ideas. The team is counting on every single one of you!"

Leadership for Global Virtual Team Transition Processes

As noted earlier, transition phases are performance episodes during which teams focus on the evaluation and/or planning activities that guide mission accomplishment in subsequent action phases. During transition phases, teams need to analyze their task, environment, resources, and membership. These processes involve identifying the team's mission and the task requirements for mission accomplishment. Teams also need to develop plans and set and prioritize team goals. The following leadership functions help provide clarity and guidance during these important strategic phases.

"Making the team." Decades of research on employee selection (McDaniel, Hartman, Whetzel, & Grubb, 2007; Schmidt & Hunter, 1998) and team composition (Kozlowski & Bell, 2003) show that choosing the right people—and the right mix of people—for the job is a critical first step toward facilitating team success. Thus, Morgeson et al. (2010) argue that *composing the team* is the first leadership function needed during initial team transition periods. This function refers to identifying the necessary characteristics of individuals for the job at hand and assembling the actual team. Importantly, highly virtual teams are often more fluid as compared to face-to-face teams (Kirkman, Gibson, & Kim, 2012) with members entering and leaving the team as task demands and environmental contingencies shift over time. Thus, leaders may need to revert to this "step 1" multiple times throughout the lifecycle of the team.

There are two key aspects involved in identifying the necessary characteristics of potential team members that should be considered in virtual team contexts (Morgeson et al., 2010). First, it is important for leaders to align individual attributes and characteristics with the team task requirements. This refers to choosing members with appropriate skill sets, personality traits, and backgrounds. The second aspect is assembling a team of members who can collaborate effectively with one another. Whereas a virtual context might facilitate the first of these two aspects, the second may be more challenging.

Virtual collaboration tools allow organizations to assemble teams that include members who are distributed around the world. In other words, virtual tools remove the traditional constraint of assembling team members who are colocated, instead enabling managers and leaders to assemble individuals whose expertise is best suited for the job, regardless of their geographic location. However, the second element of team composition, assembling individuals who are able to work together effectively, may be more difficult in virtual environments. When managers try to capitalize on the virtual environment by selecting members with the best characteristics for the job (who are often distributed globally), teams are often assembled that are composed of highly diverse members lacking shared context or backgrounds. Research on team diversity—the degree to which teams are composed of individuals that are diverse in terms of surface (e.g., gender, ethnicity) and deep-level (e.g., personality, cultural background) characteristics shows that high levels of diversity can lead to increased conflict (Thatcher & Patel, 2012), decreased trust (van Knippenberg & Schippers, 2007), and can create invisible divides among members. Thus, whereas virtual team leaders should attempt to capitalize on the virtual context by selecting members who are highly qualified (regardless of their geographic location) they should also try to balance member expertise with team-friendly characteristics (e.g., psychological collectivism) and training (e.g., cross-cultural competencies).

"Setting the course." Morgeson et al. (2010) argue that leadership during transition phases involves three key visionary functions that develop a shared purpose, plan, and structure for the team: (1) *define team mission*, (2) *establish expectations and goals*, and (3) *structure and plan*. The first of these visionary functions is to define a team mission (Morgeson et al., 2010). It is important that the team mission is compelling, challenging enough to motivate and energize team members, and clearly described so that members understand where they should be directing their efforts (Hackman, 2002, 2012). Research suggests that teams are better able to self-manage when someone (e.g., a formal team leader) provides a clear direction toward which the team should orient itself (Hackman, 2002). Second, the process of setting the course also involves identifying and communicating clear *goals* for the team that can be broken down into tangible and actionable pieces (Morgeson et al., 2010). This leadership function often involves much more active involvement of team members, with formal leaders and team members interactively developing their own goals. In other words, once the overarching mission has been clearly defined and conveyed to team members, leaders should develop and communicate clear expectations for how to accomplish the mission (Morgeson et al., 2010). Finally, the structuring and planning leadership function involves determining how goal achievement will be accomplished (e.g., the method), how work will be distributed among members (e.g., role clarification), and the temporal aspects of the work (e.g., timing, scheduling).

Developing and establishing shared missions and plans are essential processes during transition periods. However, team members of highly virtual teams who are distributed geographically lack a shared context, jeopardizing team identity and

making it difficult for teams to align perspectives and agree on a plan of action. Given that members in global virtual teams may hail from different national or cultural backgrounds, members' perceptions of what constitutes a valid strategy or plan may differ dramatically (Rasmussen, Siéck, & Smart, 2009). The likely disparity among members' perceptions highlights the need for enhanced member interaction in virtual settings to facilitate shared understanding during planning. Unfortunately, due to logistical constraints, global virtual teams frequently experience a dearth of opportunities for interaction resulting in difficulties in establishing a unified sense of purpose. Thus, strong directive leadership is needed during initial transition phases to overcome the interaction challenges presented by virtual environments and ensure that members are aligned toward a common mission.

To effectively "set the course" global virtual teams, leaders need to first provide an *inspiring* vision and/or goal for the team (Zander, Mockaitis, & Butler, 2012). Providing an inspiring vision implies developing and articulating a captivating idea for the team. Inspirational leaders that clearly articulate an inspiring and compelling vision link multicultural and globally diverse team members to a common purpose, enabling team commitment and trust (Joshi, Lazarova, & Liao, 2009). Second, leaders need to direct the process of making expectations, goals, and processes explicit. One promising way for a global virtual team leader to help clarify expectations for all members is to implement a team charter during initial transition phases. Team charters are written plans for task accomplishment and teamwork that teams develop collectively (Mathieu & Rapp, 2009). High-quality teams charters contain specific guidelines for future team interactions and facilitate team performance (Norton & Sussman, 2009) by establishing norms for behavior that reduce conflict and cognitive strain in later team performance phases (Asencio, Carter, DeChurch, Zaccaro, & Fiore, 2012). Certainly, the team leader should set some clear expectations for the team during this process. However, completing a team charter allows for a specific time for teams to discuss their particular working styles and come to an agreement collectively regarding how best to accomplish the task. For global-virtual settings, leaders might direct teams to discuss how communication tools will be used and how differences in time zones and working preferences will be handled.

"Building the skills." Morgeson et al. (2010) posit that another critical leadership function is to detect inadequacies in the team's functioning and capabilities and address these inadequacies by *training and developing* the team. These deficits may be relevant to the individual skill sets of the team members or the inability of the team to work together as a collective. Inadequacies in either of these areas can be highly detrimental to the success of the team. Therefore, upon identification, deficiencies should be utilized to inform the training and development of relevant member and team skills. Training should revolve around both instruction and demonstration relevant to the skill of interest and ensure the maintenance of these skills by providing members with organizational resources that serve as a future reference.

Training and development are especially vital for global virtual team success. As indicated previously, leaders of highly virtual teams might not be able to interact with geographically distributed team members as frequently as they would if they were colocated. Accordingly, it is essential that team members receive relevant and

effective training at the beginning of team formation so that they are able to function independently.

Two forms of training are particularly relevant to global virtual teams: technology training and cultural-competence training. First, members of highly virtual teams will likely conduct the majority of their work utilizing an array of technologies. However, team members may have different levels of experience with technology. Therefore, leaders of global virtual teams should ensure comprehensive training regarding the functionality and utilization of these tools. Communication underlies all essential team processes. Research suggests that conflict and breakdowns in virtual teamwork contexts is managed more effectively when members use their communication technology appropriately (e.g., Poole, Holmes, & DeSanctis, 1991). Moreover, for globally distributed teams, communication technology competence can make all the difference for team success.

It is important to note that technological training should be tailored to match the skill levels of the different members of the team. Training should also include guidelines for the circumstances in which each of the available technologies is most appropriate (Maznevski & Chudoba, 2000). For example, research suggests that virtual teams are most effective when they rely on richer communication mediums (e.g., face-to-face meetings, videoconferencing) to conduct important large-scale planning meetings, but rely on less rich communication mediums (e.g., email, chat) to conduct day-to-day activities. This is a clear situation in which leaders should "lead by example" by demonstrating the appropriate use of virtual communication tools.

Second, global virtual teamwork requires members to adapt their normal working behavior to account for the challenges of both virtuality and cultural differences. Likely, multicultural teams are composed of members with varying work habits, communication styles, and opinions on social issues and what constitutes appropriate team interaction (Harris & Moran, 1991; Lee & Templer, 2003). In global virtual teams, these differences may be unexpected initially, and members might miss the nuances and implications of differences altogether due to the challenges of communicating across virtual tools. For example, members may differ in their interpretation and comfort with silence (Anawati & Craig, 2006). Whereas members of some cultures may be frustrated with those who do not "speak-up" during teleconferences, others may be frustrated that they were not "asked to speak up." Thus, leaders of highly diverse virtual connected teams may wish to implement cross-cultural competence or awareness training during initial phases of team performance to reduce potential sources of conflict in later phases that are due to unexpected behaviors. Certainly, the content of cross-cultural competence or awareness training will need to correspond to the team context and the specific composition of members. Gaining cross-cultural competency is often an experiential process (e.g., spending time in a different country than one's own) that may be time consuming and is often situation specific. However, a general goal of this type of training is to allow the individual to gain interaction skills that are effective not only within his or her own in-group but also with members of other groups (e.g., nationalities, geographic locations, organizations, etc.; Black & Mendenhall, 1990). Leaders of highly diverse virtual teams may wish to include extended discussions of social norms and desired behavioral

patterns in during initial team meetings. Like members' general working styles and preferred uses for communication tools, other behavioral norms that may vary by culture could be made explicit during the *team charter* development.

Moreover, recent work suggests that in the global virtual team context, team training that only addresses technology competency yields teams who are no more likely to their communication than those teams who have not received training at all. However, global virtual teams who receive a combination of both technology and cross-cultural competency training are more likely to adapt their communications to appropriately fit the situation (Anawati & Craig, 2006). Thus, leaders must help teams gain the skills needed to reconcile both the challenges of virtual work and the challenges of cross-cultural work. An important first step for leaders is to obtain information regarding members' cultural backgrounds, time constraints, terminology (e.g., slang, colloquialisms, jargon), and communication preferences. Subsequently, the leader should work with his or her subordinates to develop a training program that educates both the leader and followers about their respective cultures (Earley & Peterson, 2004). This training should enable the leader and team members to address and accommodate cultural differences when engaging in taskwork.

“Communicating.” Many different types of events occur throughout the lifecycle of a team that can fundamentally alter its ability to succeed. Thus, leaders need to identify significant events, evaluate the impact they will have on team functioning, and relay this information to the team (Morgeson et al., 2010). In fact, leader communication is such a critical leadership behavior that some scholars have proffered “communication competency” as an alternative conceptualization of leadership itself (Barge & Hirokawa, 1989). There are several key leadership behaviors under the heading of leadership communication. First, leader *sense making* and *sense giving* involves anticipating the impact an event may have on the team and preparing the team to process and adapt to this novel experience (Zaccaro et al., 2001). Accordingly, this function allows members to remain engrossed in their taskwork while the leader serves as a mediator between the team and the surrounding context. Moreover, sense making facilitates the team's understanding of the impact of proximate events on team functioning. In virtual environments, leader sense making and sense giving skills may be even more critical. For example, Zander et al. (2012) argue that leaders must be highly skilled in communicating across asynchronous communication tools such as email or message boards that do not enable real-time feedback.

Second, team leaders need to periodically provide *feedback to team members* with regard to their teamwork, strategies, and goal progress. Feedback provides a primary input needed for the regulation, maintenance, and functioning of the team over time (Morgeson et al., 2010; Katz & Kahn, 1978). However, the global virtual team environment creates additional challenges for leader feedback. Members may differ in the degree to which they respond to direct negative feedback. Virtual tools may limit the degree to which messages are likely to be interpreted correctly. Research suggests that managers who match their message (e.g., negative feedback) to the richness of the communication tool are perceived as more effective than managers who do not (Daft, Lengel, & Trevino, 1987). Whereas a less rich communication

medium such as email or message boards may be sufficient for sending a generic team “update” message, sending a message containing negative feedback on a team member's performance may require a richer medium (e.g., videoconferencing).

Leadership for Global Virtual Team Action Processes

Immediately following transition phases, teams move into action phases where the basic requirements of the task are enacted. Action phases are those periods of time in which team behaviors are tied directly to team performance. Team behaviors typifying action phases are termed team action processes. These processes include coordination behaviors, backup behaviors, monitoring goals, and monitoring the operating environment. All are important leverage points for team leadership.

Coordination is the timing and sequencing of joint actions. Global virtual teams often manage shared resources (e.g., information) in virtual repositories, requiring careful coordination. Multidisciplinary multicultural virtual teams have particularly strong coordination needs. Coordination is the mechanism through which members with different expertise and knowledge dovetail their insights with those with other expertise. Backup behavior is another essential team process during action phases (Porter et al., 2003). Here team members monitor one another's performance and provide assistance when necessary. Teams engage in back up behavior by shuffling responsibilities within the team, altering their plans, and finding new ways to perform the overall task in light of performance gaps of particular members. Finally, monitoring the operating environment (including other team members) and the team's progress toward goals is necessary both to ensure appropriate goal progress and stay abreast of new challenges as well as to be able to appropriately coordinate activities and provide backup to other members. Members are unlikely to provide backup without knowing that other members are in need of assistance. Because of the complexities of the virtual environment, teams may struggle to engage in effective action processes. Morgeson et al. (2010) specified several leadership functions that help teams to do so. Here, we extrapolate these leadership functions to the virtual environment.

“Observing and questioning.” First, throughout team performance, leaders *monitor team activities* to ensure the team functions and performs effectively (Morgeson et al., 2010). Monitoring is a vital leadership function as it serves as the foundation to many other leadership functions (e.g., providing feedback, sense making, challenging the team). Enacting effective team monitoring behavior invokes additional leadership behaviors such as clarifying relevant strategies and plans, obtaining task-relevant information from members, and offering assistance. Aspects of the team that should be monitored include the available resources, the surrounding environment, the team's progress toward task completion, and individual member performance.

Typically, leaders of teams operating in a face-to-face context are physically present and observing task-relevant behavior in real time. Monitoring and challenging a highly virtual team, on the other hand, invokes a variety of unique considerations. Often, global virtual teams use a variety of technologies to accomplish task-relevant

work. Thus, virtual team monitoring is inherently more complex given that members can interact and work via a number of different communication modalities. Virtual team leaders are thus confronted with obtaining critical information regarding resource availability, task progress, and member performance from a variety of different sources, and synthesizing this knowledge to inform monitoring behavior.

To more effectively keep track of the myriad incoming information in global virtual teams, one recommendation for virtual team leaders is to streamline technology use. For example, some scholars suggest relying on team collaboration software such as message boards for team projects rather than back-and-forth email chains (Kirkman et al., 2012). This type of software enables a concise repository of the majority of team behavior and an easily accessible resource for leaders to monitor the team.

First Morgeson et al. (2010) posit that the degree to which team leaders *challenge the team* plays a key role in sustaining collective motivation. This leadership function involves continuously evaluating team processes and performance in order to ensure effective team behavior. Moreover, it serves to avoid member complacency by consistently challenging the status quo (Pearce & Sims, 2002). Leaders that challenge the team facilitate a line of thinking that revolves around continually questioning the present course of action in comparison with other methods of accomplishing taskwork. Encouraging this persistent reevaluation of processes and performance has been shown to enhance team innovation (Dackert, Loox, & Martensson, 2004).

It is important to note that the process of challenging team members' present course of action may prove relatively more difficult for leaders or followers from cultures with high power distance. Power distance, as defined by Hofstede (1983), refers to the extent to which an individual accepts unequal power distributions between leaders and subordinates in organizational settings. High power distance individuals, often originating from Eastern cultures, tend to defer to authority figures and view leaders as superior (Kirkman, Chen, Farh, Chen, & Lowe, 2009). On the other hand, low power distance individuals are less likely to view leaders as superior and are more likely to develop personal relationships with their supervisors (Kirkman et al., 2009). Importantly, subordinates from cultures with higher power distance are likely to be uncomfortable in evaluating and challenging the work process. Similarly, leaders with lower power distance may have difficulty requesting assessments of taskwork from subordinates.

Although it may not be possible to substantially alter the power distance orientation of team members, steps can be taken to facilitate subordinate participation in the taskwork evaluation process. Prior research suggests that building trust among leaders and subordinates from high power distance cultures may facilitate more participative interactions (Siakas & Georgiadou, 2006). Trust helps enable the transfer of knowledge and information between leaders and subordinates, facilitating an environment in which followers have the ability to evaluate workflow (Rivera-Vazquez, Ortiz-Fournier, & Flores, 2009). The need for trust to facilitate subordinate participation in taskwork evaluation underscores the need for global virtual team leaders to establish and reinforce norms and expectations for members so that a sense

of trust among members and between leaders and followers can be established over time.

"Doing the work." Morgeson et al. (2010) identify four critical action phase leadership behaviors focused directly toward enacting the team task: (1) *perform the team task*, (2) *help solve problems*, (3) *provide resources*, and (4) *manage the team boundary*. First, leadership must facilitate the performance and completion of a given team task. In other words, leaders should maintain an active role in helping team members complete objectives throughout the duration of team performance.

Second, unlike team members, formal leaders may not have a specified role to play in the actual execution of a task. Therefore, they are often afforded the ability to attain a bird's-eye view of team processes, while individual team members remain engrossed in the finer-grained details of the task at hand. This broader perspective allows leaders to identify and solve problems that may arise during the completion of a given team task.

Third, in order to sufficiently facilitate the performance of a task and help solve problems, leaders must consistently provide resources to the team. The purpose of these resources is twofold: (1) to provide members with the "informational, financial, material, and personnel" (p. 21) assets necessary to complete a task and (2) to convey that the leader supports all individual member endeavors. Leader support is critical to cultivating an encouraging and motivational team context in which members feel as though their individual contributions to the team are valued.

Finally, team boundaries define the responsibilities of each team member and the nature of the taskwork. At the same time, members must have knowledge of relevant information as it arises from their surrounding environment. Therefore, the leadership function of *boundary management*, which involves the leader serving as a liaison between the external environment and the team, is central to the management of team actions. In this capacity, the leader cultivates and appropriately maintains relationships between the team itself and other relevant stakeholders, such as the surrounding organization. Team boundary management involves consistent communication and interaction with influential individuals external to the team. Moreover, the leader serves as a buffer between the team and external forces and events. In doing so, the leader must protect the team from any harmful external influences, while garnering support for the team itself. These actions enable the team to remain focused on relevant taskwork, while the leader manages information from external constituents.

A key challenge to all four of these leadership functions that is more prevalent in virtual contexts as opposed to face-to-face teams is a lack of information. In order to effectively provide backup and resources to the team, leaders need to know: (a) what tasks have been completed, (b) what problems members are facing, (c) what resources are needed, and (d) what issues with external stakeholders need to be resolved. As noted earlier, communication is a central challenge of virtual teamwork, often leading to detriments in information shared among members (Martins et al., 2004). Thus, virtual team leaders must continuously and directly seek information from members so that they may intervene when necessary.

Global virtual team leaders may elicit information regarding work processes from team members in multiple ways. An advantage to virtual work is the availability of information from a variety of communication technologies. In many instances, these tools provide forums or repositories of information that inform leaders regarding the status of work processes. Accordingly, leaders would be well served to establish team norms for using certain tools to leverage these informational capabilities. For instance, leaders may utilize online project management software (e.g., Basecamp) that would allow members to post weekly status updates concerning their progress and what issues they may be facing. Likewise, leaders may also hold periodic teleconference or videoconference meetings that provide members with a forum to discuss the status of a given project.

Leadership for Global Virtual Team Interpersonal Processes

Whereas transition and action processes are exclusive to their respective phases, a third class of teamwork processes, *interpersonal processes*, occur throughout both transition and action phases. Interpersonal processes include behaviors such as conflict and affect management and the encouragement of motivation and confidence within the team. These processes are instrumental in establishing a foundation for effective behaviors throughout the team's life cycle—and are particularly important leverage points for leaders to shape affective emergent states such as trust (Marks et al., 2001).

By their very nature, interpersonal processes are largely reflective of the interactional nature of the team. Establishing effective interactional norms is of the utmost importance for highly virtual teams. For instance, research has suggested that virtual teams suffer from an increased prominence of conflict among members (Mortensen & Hinds, 2001). This conflict can arise from a number of factors, including an inability to resolve issues through communication technology. Recent literature also suggests that members of virtual teams may suffer from decreased motivation given that virtual settings lend themselves more to nontask related behavior and decreased opportunities for feedback (Martins et al., 2004). Moreover, interpersonal processes—if not managed appropriately can lead to breakdowns across other essential teamwork processes and emergent states.

“Keeping it positive.” A team's prevailing social environment is the foundation for member interactions throughout the task cycle. Therefore, Morgeson et al. (2010) indicate that leadership must cultivate and maintain a *positive team social climate*. This leadership function involves facilitating norms for positive member interaction and demonstrating compassion for individual member's needs. A team composed of members from different cultural backgrounds might imply that team members vary greatly along dimensions important to team functioning (e.g., power distance, assertiveness; House, Javidan, Hanges, & Dorfman, 2002). Thus, leaders of global virtual teams should attempt to create an environment in

which diverse members feel comfortable (Joshi & Lazarova, 2005; Zander et al., 2012). Accordingly, leadership must be attuned to potentially negative social interactions among team members and provide support for individual concerns. In doing so, leaders facilitate reconciliation among team members and ensure that adaptive interpersonal norms develop over time.

In traditional colocated face-to-face settings, leaders can intervene and mediate any interpersonal issues directly and in person. Supporting the team's social climate is much more difficult in global virtual teams. In culturally diverse teams, attitudes toward cultural diversity may differ with some members positively oriented toward diversity and others more negatively oriented (Bouncken, Ratzmann, & Winkler, 2008). To make matters more difficult, in distributed contexts, leaders must rely on communication technology to observe and impact the prevailing social context within a given team. It is well documented that many communication technologies inhibit the transfer of nonverbal behaviors (e.g., eye contact, tone, body language), which facilitate positive social interactions (Kirkman & Mathieu, 2005). Thus, in order to effectively develop and maintain a supportive social context, leaders could host “virtual get-togethers” over technology platforms such as videoconferencing that enable richer interactions (Malhotra, Majchrzak, & Rosen, 2007, p. 63). Taking advantage of videoconferencing opportunities builds trust and demonstrates a willingness to engage with other members (Woody, 2013). This enables leaders to convey the compassion necessary to enhance member efficacy in a manner similar to a face-to-face context. Other recent suggestions for building a supportive social climate in highly virtual teams include starting virtual meetings with recognition of team member successes and offering “virtual reward ceremonies” (e.g., have gifts delivered to a star team member and a virtual “party”; Malhotra et al., 2007, p. 67).

“Encouraging information flow.” Though not specifically incorporated in the Marks et al. model of team processes, *information sharing* is an important interaction process in teams that underpins all team processes throughout the transition and action phases. For example, a team's ability to develop strategies during periods of transition may be severely limited if members are not sharing information. Orchestrating the sequence and timing of interdependent actions (i.e., coordination) during action phases is facilitated by information sharing because members are aware of the actions of other team members.

Mesmer-Magnus and DeChurch (2009) found support for the ubiquitous importance of information sharing from in meta-analysis that cumulated 22 years of empirical research. This analysis indicated that team information sharing was significantly associated with team performance, even after controlling for a range of moderators: Mesmer-Magnus and DeChurch (2009) also found that the sharing of *unique* information (i.e., information not commonly held by all team members) was more strongly associated with team effectiveness than the breadth of information shared (i.e., information sharing *openness*). However, the latter was more associated with collective motivation than was information sharing uniqueness. These findings indicate the importance of different information sharing dimensions for team functions. This pattern of findings is consistent with the idea that the uniqueness and openness

aspects of information sharing parallel the task and socioemotional functional needs in teams. Whereas openly sharing a wide breadth of information helps promote a positive team climate, sharing unique information increases the knowledge available to all team members, directly improving the team's task outcomes.

A second meta-analysis on information sharing is particularly important to understanding virtual teams. Mesmer-Magnus, DeChurch, Jimenez-Rodriguez, Wildman, and Shuffler (2011) examined the relationship between information sharing and performance for teams interacting mostly face-to-face versus those interacting mostly through technology, and find a remarkable difference. Mesmer-Magnus and colleagues showed that whereas both open and unique information-sharing processes were important to team performance, in highly virtual teams, the openness of information exchange was a stronger predictor of performance than was uniqueness. These authors speculate that this effect stems from the positive relationship between open information sharing and affective emergent states (e.g., trust), which can be more difficult to develop in virtual teams as compared to face-to-face teams. Interestingly, this work also showed that low levels of virtuality can increase team's information sharing behaviors, but high levels of virtuality decrease information sharing. Thus, although highly virtual teams may benefit from both open and unique information sharing, these types of teams may be the least likely to engage in these processes. Leaders of virtual teams, therefore, need to foster both types of information exchange processes, but recognize that in less virtual contexts, their role is to promote unique information sharing; whereas, in more distributed interactions, teams need leadership that enables both open and unique information sharing.

"Sharing the responsibility." The majority of the team leadership behaviors delineated by Morgeson et al. (2010) involve a single individual or individuals intervening directly in team functioning. However, in recent years, perspectives on leadership both in teams and more broadly have started to shift from viewing leadership behaviors as the sole responsibility of a single "formal" leader toward an understanding that leadership behaviors are often enacted by some or all members of a collective (Pearce & Conger, 2003). Theories of shared or collective leadership contend that *encouraging team self-management* is often beneficial for team success.

Encouraging team self-management is a more "supportive and indirect" form of leadership (Morgeson et al., 2010; p. 22) that is particularly appropriate in highly virtual contexts (Bell & Kozlowski, 2002). First, sharing in leadership is thought to increase the opportunity for members in different locations to monitor and influence one another and make decisions quickly, as well as the degree to which team members are accountable to the team (Muethel & Hoegl, 2010). Globally distributed virtual teams are often comprised of skilled individuals chosen for their expertise in a given area. Thus, as task requirements shift, the team member most qualified to make decisions may change (Pearce & Conger, 2003). In support of the importance of sharing the leadership responsibilities of a team, recent empirical work suggests that the degree to which leadership duties are shared among team members is positively related to objective team performance (e.g., Small & Rentsch, 2010; Carson, Tesluk, & Marrone, 2007). Second, leaders

of globally distributed virtual teams sometimes face the daunting challenge of directing and coordinating team members, whom they have seldom, if ever met face to face. In these complex environments, it is impractical for formal leaders to manage all team actions and interactions. Moreover a strict "vertical" leadership structure (i.e., one person enacting all leadership functions) is likely to be draining on the formal leader and inefficient for team functioning (Wassenaar, Pearce, Hoch, & Wegge, 2009). Instead, leadership in global virtual teams will likely be more effective if some leadership roles are dynamically shared among multiple team members (Wassenaar et al., 2009).

Research suggests that global virtual teams encouraged to engage in self-leadership are more effective as compared to global virtual teams in which self-leadership is not encouraged (Davis & Bryant, 2003). However, face-to-face teams are more likely to develop shared leadership than are highly virtual teams (Balthazard, Waldman, Howell, & Atwater, 2004). Possibly, face-to-face interactions allow for more expressive nonverbal communication—enabling members to develop respect for the perspectives of other team members more easily (and more readily engage in shared leadership). The dilemma, however, is that shared leadership, which may be the most optimal form of leadership for globally distributed teams, is likely the most difficult form of leadership to enact. To resolve this dilemma, formal leaders need to take an active role in encouraging team self-management by distributing specific leadership duties and functions to various members. Formal team leaders might consider leadership functions as "batons" (Klein, Ziegert, Knight, & Xiao, 2006, p. 604) that are dynamically delegated among team members by the formal leader depending on task demands and constraints. Moreover, formal leaders of global virtual teams should identify opportunities for delegating leadership functions and encourage members to monitor and self-correct their own team environments.

Conclusion

In sum, models of team effectiveness contend that important team outcomes like team satisfaction, viability, and performance stem from a complex mix of teamwork processes and affective, cognitive, and motivational emergent states. Success in global, highly virtual teams is cultivated much in the same way as success in less virtual or face-to-face teams, but meeting team needs in these new contexts requires slight shifts in perspective and behavior (some suggestions are summarized in Table 10.1). Facilitating global virtual team effectiveness involves an understanding of team processes and properties and a targeted effort toward creating them. Our suggestions regarding how virtual team leaders might develop teamwork processes are meant to help leaders set parameters for global virtual teams and allow members to work more autonomously and collaboratively.

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