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Structuring Successful Global Virtual Teams

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Keywords (separated by "-")	Global team - Global virtual team - Culture - Leadership - Communication - Structure - Team design

Chapter 4
Structuring Successful Global Virtual Teams

[AU1] **Stephanie Miloslavic, Jessica L. Wildman, and Amanda L. Thayer**

When asked to think of a twenty-first century organization, what comes to mind? If asked to list ten adjectives to describe today's organizations, it's likely that one or more of those descriptors would be "global," or "virtual." Indeed, it is becoming increasingly common for organizational employees to belong to one or more teams whose members are geographically dispersed and potentially spanning the globe. With technology advancement, geographical and time zone differences no longer prevent employees from working together. Thus, organizations have greater potential to expand across nations and work with international partners, making global teams more prevalent in the workplace.

Global teams refer to groups that work in geographically dispersed environments that are heterogeneous on a number of dimensions such as nationality and cultural diversity (Jarvenpaa & Leidner, 1999; Maloney & Zellmer-Bruhn, 2006). Teams are utilized in organizations in order to more effectively complete complex tasks that are beyond the scope of what an individual could reasonably accomplish. In particular, teams provide an increased capacity for workload and human capital. Global teams can further build on these advantages by leveraging diversity to increase innovation (Gibson & Gibbs, 2006). However, members and leaders must also be mindful of

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the potential problems that can arise from sociocultural differences in order to ensure this diversity translates into effective teamwork and organizational outcomes. Therefore, there is a need for organizational leaders to understand the complexities of global teams as well as how they might differ from domestic teams in order to set the conditions for team effectiveness (Tannenbaum, Mathieu, Salas, & Cohen, 2012).

When compared to traditional or conventional teams, organizational leaders may not initially believe that global teams are very different. However, the complexity of collaborating with global team members is not exaggerated. Traditional teams tend to take for granted informal interactions such as eating lunch together or running into another individual in the hall. However, these off-task interactions and information exchanges play an important role in developing relationships by building cohesiveness and trust. Unfortunately, these types of exchanges are rarely possible for global team members to experience, given most interactions are task focused and typically mediated by virtual tools. Because of these inherent challenges, organizational leaders must carefully consider the team's structure and characteristics when designing global virtual teams. Wildman et al. (2012) recognized the importance of considering the structure and function of teams and developed two theoretical organizing frameworks to enhance classification: (1) an integrated set of task types that categorizes the types of work that many teams complete and (2) an integrated set of team-level characteristics that describes the nature of the team itself independent of the work being completed. The integrated set of team-level characteristics is particularly important when structuring global teams, since some team-level structural characteristics may be more or less appropriate across cultures, time zones, and technologies.

Accordingly, the primary purpose of this chapter is to summarize the theoretical and empirical research on team structural elements in global teams and synthesize this literature into useful recommendations for organizations seeking to make decisions regarding the structure and design of global teams. First, we will discuss the defining characteristics that are likely to exist in what we refer to as global teams (e.g., distribution, multiple cultures, time zone differences, etc.). Second, we will review the Wildman et al. (2012) framework of team-level characteristics. Third, theoretical and empirical research discussing the influence of these structural characteristics on global teams and practical recommendations for global team leaders will be provided by using the team-level characteristics framework as a basis for the suggestions.

Global Teams

In an effort to provide more useful and practical recommendations to organizations and organizational leaders, research across several areas will be integrated. Specifically, theoretical and empirical work on the following topics will be combined: global teams, virtual teams, multicultural teams, distributed teams, team diversity,

and team structure. Virtual teams are comprised ~~groups~~ of individuals that are geographically and/or organizationally dispersed, working together through telecommunication in order to accomplish organizational tasks (Townsend, DeMarie, & Hendrickson, 1998). Multicultural teams can be defined as, "a group of people from different cultures, with a joint deliverable for the organization or another stakeholder" (Stahl, Mäkelä, Zander, & Maznevski, 2010, p. 439). Distributed teams refer to "groups of geographically dispersed employees with a common goal carrying out interdependent tasks using mostly technology for communication and collaboration" (Bosch-Sijtsema, Ruohomäki, & Vartiainen, 2009, p. 534). Finally, team diversity refers to an aggregate construct that, "represents differences among members of an interdependent work group with respect to a specific personal attribute" (Joshi & Roh, 2009). Diversity may refer to task-oriented or relation-oriented diversity (Joshi & Roh, 2009), as well as surface-level and deep-level attributes (Bell, 2007).

One of the most important factors that can be used to describe a global team is its level of team virtuality. Team virtuality is defined as the extent to which team members use virtual tools to coordinate and execute team processes, the amount of informational value provided by such tools, and the synchronicity of team member virtual interaction (Kirkman & Mathieu, 2005). Kirkman and Mathieu (2005) proposed three dimensions of virtuality, including (a) extent of reliance on virtual tools, (b) informational value, and (c) synchronicity. Extent of reliance of virtual tools refers to the level of interaction among team members that takes place virtually. Teams may interact entirely through virtual media, schedule periodic face-to-face meetings, or conduct all task work face to face without the use of virtual tools. The vast majority of global teams complete their work primarily via the use of virtual tools. Informational value concerns the value of the communications sent or received through virtual teams for team effectiveness. When members employ technologies that convey rich and valuable information (e.g., visual social cues such as facial expressions) their exchanges are considered to be *less* virtual. Although global teams generally do use virtual tools, the informational value of those tools can vary from very little (e.g., email) to a lot (e.g., video conferencing). Finally, global teams can vary in their level of synchronicity, or the degree to which a team's exchange of information is synchronous (i.e., in real time; chat or teleconferencing) versus asynchronous (i.e., delayed; email; Goel, Sharda, & Taniar, 2003; Pinelle, Dyck, & Gutwin, 2003). Team virtuality is not simply the reliance or use of virtual tools, but the notion that different virtual technologies offer different (dis)advantages ~~for enhancing~~ team effectiveness (Kirkman & Mathieu, 2005).

In global teams, members also often differ in their cultural backgrounds and identities. Culture is defined as the assumptions people hold about relationships with each other and the environment that are shared among an identifiable group of people (e.g., team, organization, nation) and manifest in individuals' values, beliefs, norms for social behavior, and artifacts (Gibson, Maznevski, & Kirkman, 2009). Cultural dimensions describe the values of a group's members and how these values relate to behavior (Hofstede, 1984). Cultural values are particularly important in team settings because they have implications for shaping teamwork attitudes

(e.g., trust, cohesion), cognitions (e.g., shared mental models), and behaviors (e.g., information exchange, backup behavior; Shuffler, DiazGranados, & Salas, 2011) such as communication and conflict management (Taras, Kirkman, & Steel, 2010). Numerous taxonomies of cultural values have been proposed (e.g., Hofstede, 1980, 2001; House, Hanges, Javidan, Dorfman, & Gupta, 2004; Schwartz, 1992, 1994; Trompenaars, 1993). Generally speaking, these models suggest that cultures can vary in terms of their distribution of power and authority in society, centrality of individuals or groups as the basis of social relationships, people's relationship with their environment, use of time, and mechanisms of personal and social control (Nardon & Steers, 2009). When determining how to structure and design global teams, organizational leaders should take culture into account to ensure that the team structure and norms match cultural values and norms to the extent possible.

Although various types of teams have been distinguished in previous work (e.g., Bell & Kozlowski), we suggest that it is more useful to highlight the similarities between team types. Global teams share several common characteristics with virtual, multicultural, distributed, and diverse teams. These common attributes include, but are not limited to, geographical distribution, cultural diversity between team members, time zone differences, and reliance on electronic communication. Thus, we view these types of teams as analogous enough that they can be discussed together under the overarching term of "global teams."

Integrated Team-Level Characteristics

In an effort to synthesize prior research and provide a tool to inform team-oriented practitioners and researchers, Wildman et al. (2012) developed an integrated set of team-level characteristics that ~~essentially~~ describe core team structural attributes. This set of higher level attributes is meant to describe the basic structure and nature of teams at any single snapshot in time. This set of characteristics includes task interdependence, role structure, leadership structure, communication structure, physical distribution, and team lifespan (defined in more detail below). Each of these attributes is further defined by discrete, mutually exclusive categories. For instance, when describing a team's interdependence, it could be considered either pooled or intensive, but not both. Table 4.1 provides an overview of each of the team-level characteristics. We now further discuss each of these team characteristics in the context of global teams and provide a practical set of recommendations for leaders of global teams.

Task Interdependence

Task interdependence refers to the extent to which outcomes of the team members are influenced by, or depend on, the actions of others. Based on the taxonomy proposed by Saavedra, Earley, and Van Dyne (1993), Wildman et al. (2012)

t1.1 **Table 4.1** Integrated set of team-level characteristics

t1.2 Characteristic	Description	Discrete categories
t1.3 t1.4 Task interdependence	The extent to which outcomes of the team members are influenced by, or depend on, the actions of others	Pooled, sequential, reciprocal, intensive
t1.5 t1.6 t1.7 Role structure	The extent to which roles are fundamentally different and therefore not interchangeable or each person is capable of performing every component	Functional, divisional
t1.8 t1.9 t1.10 Leadership structure	The pattern, or distribution, of leadership functions such as setting direction and aligning goals among the members of the team	External manager, designated, temporary, distributed
t1.11 t1.12 Communication structure	The pattern, or flow, of communication and information sharing among the members of the team	Hub and wheel, star, chain
t1.13 t1.14 Physical distribution	The spatial location of the team members in reference to one another	Colocated, distributed, mixed
t1.15 t1.16 Team lifespan	The length of time for which the team exists as a functional, active unit	Ad hoc, long term

specified four levels of task interdependence: pooled, sequential, reciprocal, and intensive. In pooled task interdependence, each member contributes to the outcome without any direct interaction with other team members. Sequential task interdependence is similar to an assembly line in that interactions move in one direction and each team member must act prior to the next member. Reciprocal task interdependence is characterized by team members working in one-on-one interactions with other team members. Finally, intensive task interdependence is characterized by collaboration between all team members in an effort to achieve desired outcomes.

In general, acknowledging the level of interdependence within a global team is important because the way in which team attitudes and behaviors translate into performance often depends on the level of task interdependence (Barrick, Bradley, & Colbert, 2007). For instance, in traditional teams, interdependence moderates the process–performance relationship. That is, cohesion and open communication are more related to performance (i.e., are more important) when the task interdependence is high (Barrick et al., 2007). In other words, because the team members are heavily reliant on one another to accomplish the team's goals, it is very important for them to develop close bonds and to communicate effectively. However, when interdependence is low, cohesion and open communication are not as necessary and are less predictive of performance. Furthermore, task interdependence also interacts with team efficacy (i.e., the collective belief of group members in their capacity to execute a course of action that will result in a certain level of performance; Bandura, 1997) in predicting team performance. That is, when task interdependence is high, team collective efficacy emerges as a predictor of team performance. However, when task interdependence is low, collective efficacy does not predict team performance (Katz-Navon & Erez, 2005). Generally, high levels of interdependence intensify the impact of team processes on performance.

This moderating effect of task interdependence on the relationship between key team processes and performance is critical to consider in global teams because it is

often more difficult to these processes in virtual work settings. Therefore, if a global team is highly task interdependent, it must focus more on building relationships in order to increase cohesion, trust, and develop shared views across cultural, organizational, and ~~country~~ borders (Kelley, 2001). This relationship building is often engaged in through periodic face-to-face or telephone conversations. If possible, face-to-face meetings should be set up in the early stages of the team's lifespan in order to facilitate strong relationship building as well as reduced conflict in the future. In global teams, where it is easy to feel disconnected from other team members, it is all the more important to consider interdependence in order to appropriately leverage team benefits. The task interdependence in global teams ranges from low to high (Maznevski & Chudoba, 2000), which suggests that pooled, sequential, reciprocal, and intensive interdependence structures are all possible within global teams. As task interdependence increases, it becomes more important for the team to put extra effort into developing the key processes and emergent states such as cohesion, trust, and effective communication in order to ensure optimal team performance.

Researchers have also previously suggested that global team effectiveness depends on the alignment of task demands with the communication technology used by teams (Strauss & McGrath, 1994). Indeed, empirical research has found that global team performance depends on the fit between the nature of the task and the synchrony of communication (Rico & Cohen, 2005). The synchrony of communication is conceptualized as a continuum where degree of synchrony refers to the extent to which the technology used in team communication facilitates teams working together in the same space and time. In other words, a highly synchronous tool may be a videoconference call, where as an asynchronous tool may be an email. In the Rico and Cohen study, performance was not significantly different under two conditions: high interdependence and synchronous communication and low interdependence and asynchronous communications (Rico & Cohen). However, as a whole, performance was better for teams using synchronous communication tools. In the context of global teams, synchronicity is further challenged by time zone differences. If teams are operating across the globe, there may be few times when the entire team can meet via videoconference or other synchronous methods, unless some team members operate during nonprime work hours. In this situation, it is beneficial for team cohesion to "share the burden" and rotate the meeting schedule so that it is not always the same people or person that is required to either work late or get up early.

In sum, under high task interdependence conditions, global teams should attempt to utilize synchronous, rich media to the extent possible, and supplement with asynchronous methods (e.g., email) as needed. However, the literature suggests that under low task interdependence conditions, communication, cohesion, and other aspects of teamwork are less influential for performance, and therefore face-to-face interactions or rich synchronous media may be less important.

> Recommendation 1: For highly interdependent global teams, utilize synchronous communication tools that allow increased face-to-face interaction to promote teamwork behaviors and attitudes and supplement with less rich media as needed. For less interdependent teams, less synchronous communication tools may be sufficient.

Role Structure

Role structure refers to the extent to which roles are fundamentally different and therefore not interchangeable. Wildman et al. (2012) specified two different types of role structure: functional and divisional. A functional role structure is one in which each role within the team serves a distinct role and team members are not interchangeable, whereas a divisional role structure is one in which the roles are similar and therefore members are more interchangeable. In other words, members of a team with functional role structures perform fundamentally different, specialized roles. Alternatively, members of a team with divisional role structures are able to perform any and all pieces of the overall task, but focus on one particular task at a time.

Both functional and divisional role structures are certainly possible within global teams. Global teams often allow for more flexible organizational responses, meaning that the potential exists for these types of teams to be more dynamic than traditional teams (Townsend et al., 1998). The role structure of the team will be primarily influenced by two factors: (1) the scope of the project and (2) the complexity of the work necessary to complete the project. The scope of the project impacts the necessary role structure, such that a divisional role structure is appropriate for teams working on a single-disciplinary project. Alternatively, in a multidisciplinary environment, a functional role structure is necessary. In a similar vein, the role structure of the team will also be influenced by the complexity of the tasks that must be completed. For instance, low complexity tasks are more interchangeable compared to those that are more complex and challenging and require a combination of specialized knowledge and skills (Bell & Kozlowski, 2002). Tasks with greater complexity require more training, specialization, and expertise, and therefore inherently require a functional role structure.

One additional component that creates complexity stems from holding multiple roles. Team members may hold multiple roles across different global teams, which increase the likelihood that individuals will experience role ambiguity and role conflict (Bell & Kozlowski, 2002). Role ambiguity refers to vague and unclear expectations being set for employees, such that they are uncertain what is expected of them (Katz & Kahn, 1978). Role conflict refers to contradictory expectations from coworkers that create difficulty in task progress and completion (Katz & Kahn, 1978). For both of these role stressors, negative relationships have been found with job satisfaction and organizational commitment and positive relationships have been found with emotional exhaustion, tension, and anxiety (Fried, Shirom, Gilboa, & Cooper, 2008; Jackson & Schuler, 1985; Örtqvist & Wincent, 2006). Additionally, role stressors have been found to be negatively associated with task performance (Gilboa, Shirom, Fried, & Cooper, 2008) and organizational citizenship behaviors (i.e., discretionary behavior that benefits organizations and employees by improving the social and psychological context; Eatough, Chang, Miloslavic, & Johnson, 2011), reinforcing the negative outcomes associated with role stressors.

Therefore, reducing the role stressors as much as possible in global teams is essential. Research has found that a primary method through which role ambiguity

and conflict can be reduced is by clearly specifying each member's role in the team (Kozlowski, Gully, Nason, & Smith, 1999). In the case of global teams, leaders will need to find ways to clearly communicate the intended role structure (i.e., functional or divisional) through the use of virtual communication tools. A functional role structure will be less challenging to keep clear, given each team member will have a distinct and specialized role. A divisional role structure, however, may tend toward higher levels of ambiguity and global team leaders will need to be careful to monitor team performance to ensure no role overlap or redundancy occurs.

Different role structures are more or less suitable depending on situational constraints (Hollenbeck et al., 2002; Moon et al., 2004), including (a) the predictability of an environment and (b) the interdependency requirement. In an unstable, random, and unpredictable environment, changes constantly occur. In these types of situations, a divisional role structure may be more appropriate because it promotes flexibility within the team. In particular, teams may benefit from the development of shared mental models (i.e., collective knowledge that team members have in common) within divisional role structures. Conversely, in a stable and predictable environment, changes and random events rarely occur. In these types of situations, a functional role structure may be more appropriate because it promotes efficiency by reducing redundancy and developing high levels of expertise for each team member. In particular, under stable conditions teams can benefit from the development of transactive memory systems, where there is a collective awareness within the team of "who knows what." Indeed, empirical research supports this, suggesting that divisional role structures outperform functional role structures in unpredictable situations, whereas functional role structures outperform divisional role structures in predictable situations (Hollenbeck et al., 2002).

Generally speaking, global teams may be less predictable than traditional teams. Namely, global teams are subject to a wider range of challenges that can greatly impair teamwork and team outcomes. For instance, global teams must rely on computer-mediated communications in order to communicate and coordinate. As such, if there is a technology failure that prevents communication among members, the team must be able to adapt in order to perform the team's task. Furthermore, time zone differences and different cultural norms regarding holidays may prevent particular team members from working during certain times. Team members may need to engage in backup behavior in order to complete the task in the face of these time zone and cultural differences. In this case, a divisional structure may be more appropriate for global teams, to the extent possible given the task at hand.

The interdependency requirement within a team may also determine the most appropriate role structure. In other words, given that long-term teams may exist for the duration of an organizations life, the types of projects completed by team members may vary to a great extent. In order to provide maximum efficiency, the change in project types may necessitate a change in role structure. For instance, a functional role structure promotes high levels of task interdependency. Research has shown that, when necessary, team members in a functional role structure are able to switch to a divisional role structure; however, team members in a divisional role structure are not able to successfully change to a functional role structure, even when the environment required a change (Hollenbeck et al., 2002; Moon et al., 2004).

The reasoning behind this is that norms of high communication and backing-up behavior exist within functional role structures due to their high interdependence. Team members are able to leverage these dynamics and successfully adapt to a divisional role structure. However, in the context of global teams, cultural values may influence the extent to which this adaptation is seen as a viable and effective option. For instance, in high power distance cultures that value hierarchy, individuals are socialized to comply with their roles and are sanctioned if they do not (Schwartz, 1994). As such, individuals who hold these values may be resistant to adapting to a divisional role, seeing this as a weakness. Therefore, organizational leaders must consider the cultural values of their global teams when structuring roles.

> Recommendation 2: Because global teams are operating in often unpredictable and dynamic environments, utilize divisional role structures, unless the task is highly complex or multidisciplinary in scope in which case a functional role structure may be more appropriate.

Leadership Structure

Leadership structure refers to the pattern or distribution of leadership functions, such as setting direction and aligning goals, among the members of the team. Wildman et al. (2012) specified four common patterns of leadership structure: external manager, designated leader, temporary leadership, and distributed leadership. Gibb, Gilbert, and Lindzey (1954) described two basic forms of team leadership: focused leadership, in which the leadership resides in a single individual, and distributed leadership, in which two or more individuals share roles and responsibilities. The forms of leadership structure described in Wildman et al. (2012) range from more traditional focused leadership (i.e., external; designated) to distributed leadership (i.e., temporary; distributed). Specifically, external and designated leadership are structures that represent more formal, individually focused team leadership. An external manager refers to a leadership structure in which an individual outside of the team fulfills the leadership responsibilities, but is not otherwise a member of the team. A designated team leader is a team member who performs all of the leadership responsibilities and also is involved in the primary team task. In both leadership structures, only one individual holds the leadership responsibilities.

Temporary and distributed leadership are forms of what is known as shared ~~or distributed~~ leadership. Shared leadership can be defined as an interactive process in groups in which team members lead one another to achieve the group's goals (Pearce & Conger, 2003). Leadership can be shared over time or concurrently. Teams can temporarily designate one individual to perform as the leader and rotate leadership to others over time or based on the particular task at hand. This can be referred to as temporary or rotated leadership (Erez, LePine, & Elms, 2002). Finally, distributed leadership refers to a scenario in which several team members perform leadership responsibilities simultaneously. For instance, one team member could be assigned to a specific leadership function such as planning, whereas another team member could be assigned to confidence building and team member motivation.

Some research has directly compared the utility of vertical (i.e., individual) leadership and shared leadership in virtual teams. Solansky (2008) examined the leadership structure of student work teams and found that teams that exhibited high levels of shared leadership (i.e., at least 50 % of team members identified multiple leaders) had higher collective efficacy and better transactive memory than teams that engaged in single leadership (i.e., teams that identified only one leader). Pearce and Sims (2002) found that both vertical and shared leadership contribute uniquely to team effectiveness. However, shared leadership was a stronger predictor of team effectiveness than vertical leadership. Similarly, Muethel, Siebdrat, and Hoegl (2012) demonstrated that self-reported shared leadership behaviors predicted team performance in distributed software development teams. In terms of the type of shared leadership, shared transformational and empowering leadership were beneficial but shared aversive and directive leadership were harmful for performance (Pearce & Sims, 2002). In a study of leadership networks, Carson, Tesluk, and Marrone (2007) found that teams with more dense shared leadership (i.e., more team members involved in leadership) had higher performance. Leadership delegation has also been positively linked to team satisfaction (Zhang et al., 2009).

Taken ~~together~~, the research generally suggests that both vertical and shared leadership are beneficial, but that the sharing of leadership functions may play a particularly important role for global virtual teams. Shuffler, Wiese, Salas, and Burke (2010) suggest that shared leadership is especially important for virtual teams because the physical separation between the team's leader and the other team members makes it necessary to distribute leadership functions in order to ensure they are being completed. Sharing leadership is also beneficial for virtual teams because it helps team members develop a stronger bond and a better understanding of each team member's responsibilities, strengths, and weaknesses. Sharing leadership also likely empowers each team member to feel a sense of contribution to team's overall success.

By suggesting that global virtual teams should engage in shared leadership, we are not saying that vertical leadership should not be used as well. There is a close relationship between vertical and shared leadership (Pearce & Sims, 2002). Strong vertical leadership is helpful, if not necessary, for encouraging the distribution and sharing of leadership functions. In other words, to get leadership functions distributed across global virtual team members, a directive vertical leader may need to orchestrate that distribution. For example, Heckman, Crowston, and Misiolek (2007) argue for a second-order model of shared leadership in virtual teams. They suggest that effective virtual teams will have a combination of shared first-order leadership complemented by a strong centralized (or focused) second-order leadership. First-order leadership is meant to maintain existing structures and procedures whereas second-order leadership is meant to modify and adapt team structures. This theory therefore suggests that because first-order leadership is focused on maintaining the more predictable, established norms and behaviors within the team, it can be effectively shared among team members. However, because second-order leadership is focused on transformation and adaptation, it requires strong leadership from one individual to manage those change processes. Therefore, we suggest that global

virtual teams may benefit from distributing the routine, daily leadership functions among team members while assigning one designated leader for enacting and overseeing any transformational activities. Carte, Chidambaram, and Becker (2006) supported this notion of second-order leadership by finding that focusing performance-related leadership but sharing monitoring-related leadership led to higher performance in self-managed virtual teams.

Ocker, Huang, Benbunan-Fich, and Hiltz (2011) found via qualitative research that teams with shared leadership had a stronger awareness of member capabilities and this positively influenced performance. In other words, it appears that the sharing of leadership responsibilities across team members is related to a higher quality transactive memory system, which improves performance. It was also found that emergent leadership, or self-initiated leadership not formally assigned by the organization, was more effective than assigned leadership. This is likely because the individuals that emerge as leaders are more likely to be highly motivated and therefore more effective leaders than individuals simply assigned to be leaders. By allowing leadership to emerge within the team, it increases the chance that the "right" person within the team will step into the leadership role. Research suggests that both the composition of the team and the communication mediums used can influence leadership emergence. Balthazard, Waldman, and Warren (2009) found that communication media that mimics face-to-face interactions (e.g., video conferencing) increased the emergence of transformational leadership in team members that were extraverted and emotionally stable. Cogliser, Gardner, Gavin, and Broberg (2012) found that agreeableness and conscientiousness were positively related to leadership emergence in virtual teams. Organizations can use selection procedures and work design to increase the likelihood that global virtual team members will naturally emerge as leaders, further encouraging the sharing of leadership across multiple team members.

> Recommendation 3: Allow for the natural emergence of shared first-order leadership functions (i.e., individuals electing to take on leadership focused on maintaining existing structures and routine procedures) but concentrate second-order leadership functions (i.e., enacting and overseeing transformational activities and adaptation) within a single designated leader.

Communication Structure

Communication structure refers to the pattern, or flow, of communication and information sharing among the members of the team. Wildman et al. (2012) specified three different types of communication structures: hub-and-wheel, star, and chain. A hub-and-wheel communication structure refers to one in which communication passes through a single team member (often, but not necessarily the leader) before being circulated to other team members. A star communication structure refers to one in which information is freely passed between all team members. A chain communication structure refers to a hierarchical structure, where information is passed up and down the line of authority in a sequential manner.

The nature of effective communication in global teams differs in comparison to in-person teams. Specifically, in-person teams are provided the opportunity to pick up on nonverbal cues, whereas global team members are faced with a limited cue set (Cannon-Bowers & Bowers, 2011). These circumstances may generally reduce information sharing. Two primary types of information sharing exist: unique information sharing and open information sharing (Mesmer-Magnus, DeChurch, Jimenez-Rodriguez, Wildman, & Shuffler, 2011). Unique information sharing refers to the "variability in how many group members have access to a piece of information" (Hinsz, Tindale, & Vollrath, 1997, p. 54). Open information sharing refers to "the extent to which a team is overtly sharing information, unique and common alike" (Mesmer-Magnus et al., 2011, p. 216). A recent meta-analysis found that virtuality facilitates the sharing of unique information, but hinders open information sharing (Mesmer-Magnus et al., 2011). Additionally, the type of information sharing was investigated as a predictor of performance in global teams as well as face-to-face teams. Results suggest that open information sharing is more important than unique information sharing in global teams. Based on these results, it is likely most beneficial to encourage global teams to engage in both types of information sharing—unique and open.

The structure of communication is an important consideration in global teams given that information sharing between team members may be restricted in comparison to in-person teams. Specifically, the necessity to use mediating technology, differing work contexts, and geographical distance all contribute toward constraining knowledge sharing and shared understanding (Gibson & Cohen, 2003). Unfortunately, virtual team members may not anticipate which information is most important to share with their virtual counterparts or the extent to which sharing is impacted by using technology-mediated communication. Whereas collocated teams tend to share the same environment, this often is not the case with virtual teams. Therefore, greater task (i.e., information about how to carry out the task), social (i.e., information about team members and their relationships with each other), and contextual (i.e., information about the environment surrounding the task, team members, and teams) information should be communicated within virtual teams. However, research suggests that virtual team members do not anticipate these differences and tend to assume the other team members' situations are similar. Indeed, research suggests that teams communicating through text-based media communicate more than 950 words less on average compared to face-to-face teams (Straus, 1996). In addition to physical proximity, one primary cause of restricted information sharing is due to the degree of synchronicity of communication tools. For instance, highly synchronous tools are those most similar to face-to-face interactions (e.g., videoconference calls), whereas asynchronous tools are most unlike face-to-face interactions (e.g., email).

Several communication challenges exist for global teams (Gibson & Cohen, 2003; Rosen, Furst, & Blackburn, 2007). Examples include (a) failure to receive important messages, (b) cultural differences in how frequently email is checked, (c) interpretation of silence, (d) levels of trust, (e) constraints on knowledge sharing, and (f) failure to develop a transactive memory system within the team (Cramton, 2001, 2002; Rosen et al., 2007). Especially in global virtual teams, it is unclear

whether or not a lack of response to an email is because a team member did not actually receive it or because they chose to ignore it. For example, incorrect or outdated email addresses may be added to a listserv or distribution list. If that is the case, other team members may believe that the individual has just chosen not to respond, though the issue is that they did not actually receive it. Additionally, the accessibility of Internet differs across nations, as do norms surrounding how often individuals check email. Whereas an American may be connected to their email 24 h per day, it may be custom for individuals in other cultures to check their email only once a day or every couple of days. As a result, a select subset of team members may communicate more frequently causing the team to become out of sync and potentially delaying progress. Furthermore, if some members of the team are silent, other team members may interpret silence as agreement, disagreement, or indifference.

Global teams also face several challenges associated with trust in teammates. This can be problematic, as levels of trust between team members may influence the quantity as well as quality of information that is shared among team members. However, a psychologically safe climate can be created by reinforcing all types of knowledge sharing between team members. Novel ideas should be acknowledged, asking for assistance should be encouraged, and constructive feedback should be provided between team members. Team members may produce constraints on knowledge sharing by hoarding information or encouraging team members to keep project details private. It is important for leaders to communicate the importance of a collaborative environment, clarify how each member contributes to that mission and vision, and recognize members for sharing knowledge. Finally, when a transactive memory system does not exist within a team, teams are not able to function to their maximum potential because team members are not aware of the expertise and experience held by team members. When team members initially meet, each member should provide information about their experiences, education, and any special expertise that they hold.

> Recommendation 4: To promote sharing of open and unique information, provide rich, synchronous media; reinforce knowledge sharing and feedback; and promote discussion surrounding cultural norms associated with communication as well as members' experiences, education, and expertise.

Physical Distribution

Physical distribution refers to the spatial or geographic location of the team members in reference to one another. Wildman et al. (2012) specified three basic patterns of physical distribution: fully collocated, fully distributed, and mixed. Fully collocated physical distribution refers to situations in which all team members are located in close enough physical proximity to have regular face-to-face meetings. A fully distributed team refers to situations in which team members are located far enough apart in terms of physical proximity that most, if not all, communication occurs through some sort of telecommunication (e.g., computer, email, videoconference,

telephone, etc.). Finally, mixed physical distribution refers to situations in which a subset of team members is collated and a subset of team members is distributed and therefore a mix of face-to-face and virtual communication is used.

O'Leary and Cummings (2007) discuss team configuration as a particular framework for understanding more nuanced patterns of spatial distribution. This refers to the arrangement of team members across locations and includes three dimensions: the number of locations, the number of team members at each location, and the pattern of prescribed team roles across those locations. This framework is helpful for understanding the dynamics within partially distributed, also known as semivirtual, teams. Webster and Wong (2008) found that semivirtual teams had more positive perceptions of their local teammates compared to the distributed teammates, but there were no differences in perceptions between fully colocated and full virtual teams. In other words, the contrast that is directly perceived when an individual has both colocated and remote teammates led to the difference in perceptions regarding those two categories of teammates. Webster and Wong (2008) explain that this is due to the fact that the context of a semivirtual team brings into play stronger in-group/out-group biases compared to fully colocated or fully distributed teams. Privman, Hiltz, and Wang (2013) further demonstrate that in-group/out-group dynamics are stronger in partially distributed teams because there is an imbalance in the availability and use of communication channels between versus within the colocated and distributed subgroups. O'Leary and Mortensen (2010) found that having uneven subgroups across physical locations creates a competitive mentality that weakens team identity, leads to less effective transactive memory, exacerbates conflict, and hinders coordination. Furthermore, members of minority subgroups experienced significantly more problems than members of the majority subgroups.

This suggests that in order to develop a strong, cohesive team identity, global teams are better off being either fully colocated (although, clearly, this would be practically difficult to achieve) or fully and equally distributed. If, however, partial distribution is inevitable, team leaders need to monitor the team for formation of subgroup tensions and encourage frequent, consistent communication both within and between subgroups in the team. In sum, the pattern of physical distribution can have a significant impact on the processes and performance of global virtual teams. The ideal pattern is to have a relatively even distribution of team members across the various locations or sites rather than having uneven numbers of team members at different locations.

Ocker et al. (2011) further suggest that the number of members per geographic location and the location of the team leader(s) can become challenges for global virtual teams. Specifically, large geographically separated subgroups can be difficult to manage especially if the leader of the team exists within a smaller geographically separated subgroup. The geographic distance between the subgroups creates in-group/out-group dynamics, and because one of the subgroups has more members than the other, it may have a tendency to feel more power and control over the entire team's decisions. This can result in a situation in which the assigned team leader struggles to maintain authority and power over members from a large subgroup that do not identify with the team as a whole as much as they identify within the subgroup.

From a composition standpoint, managers of global virtual teams should strive to form teams that have small, relatively equally sized subgroups at each of the geographic locations. Furthermore, they should be careful to ensure that the team leader, to the extent possible, is situated in a subgroup that does not put them at a power disadvantage.

> Recommendation 5: To the extent possible, construct global teams that are fully collocated or fully distributed. If that is not possible, strive for equally sized subgroups across geographic locations; encourage active and equal communication within and between geographic locations; and ensure the leader is physically positioned in a subgroup that is equal to or larger than the others.

Team Lifespan

Team lifespan refers to the length of time for which the team exists as a functional, active unit. Wildman et al. (2012) specified two different types of team lifespans: ad hoc and long term. An ad hoc team is a team that is designed to perform a specific short-term task and then subsequently disband, whereas a long-term team refers to one in which the team is intact and exists for the purpose of completing an unspecified or unlimited number of tasks, rather than a single time-limited task. In related work, Saunders and Ahuja (2006) developed a framework for examining distributed teams based on their lifespan. They differentiate between temporary distributed teams and ongoing distributed teams, and generally argue that the two types of teams will experience very different processes and outcomes. In this framework, teams are differentiated based on the perceived lifespan of the team's tasks rather than based on an absolute unit of time. Temporary distributed teams engage in only a few tasks to accomplish their overall goal, and then they are disbanded. Ongoing distributed teams, on the other hand, engage in a variety of tasks in order to accomplish many, or recurring, goals. This corresponds very closely with the definition of ad hoc and long-term teams given by Wildman et al. (2012).

Ongoing distributed teams are expected to differ from temporary distributed teams in several ways. Ongoing team members expect future interaction beyond the proximal task at hand. Because they will have long-term expectations to continue working with the same group of team members into the foreseeable future, they will be more concerned about getting along with those team members and having a satisfactory experience than if they expected to disband after only a short time. Ongoing distributed teams are more likely to be concerned about team member satisfaction in general and are more likely to develop a group identity compared to temporary distributed teams. This also means that there is more time for relationship problems to develop as well, making the development of cohesion and positive attitudes very important for the long-term success of the team. Therefore, ongoing globally distributed teams will need to engage in more social development activities than temporary distributed teams.

Conversely, temporary virtual team members will anticipate disbanding after the team's goal is completed. This means they will be less concerned with team member

satisfaction with the team because they know it is not a permanent experience. Rather than focusing on interpersonal dynamics and team satisfaction, temporary virtual team members will be more focused on short-term goal attainment. Namely, because the goal of temporary teams is to complete the project or mission and then move on to other teams, the focus is on efficiency and effectiveness. Therefore, temporary distributed teams will not benefit as much from social development activities such as small talk or face-to-face "getting to know" meetings. In fact, these activities may be interpreted as time-wasting distractions in the context of the short-term mission or project, though this will be driven by cultural preferences as well. Instead, temporary virtual teams will benefit most from immediately setting norms and expectations regarding technology use, communication, and task work. By setting these norms as early as possible, the team can facilitate a faster and smoother transition into the task work necessary to complete the team's goal. In other words, setting norms early allows the team to focus on proximal task completion since social interactions and team satisfaction are not valued in temporary settings.

> Recommendation 6: When leading a newly formed global team, meet face to face in the beginning, if possible, and develop a charter consisting of team norms for technology use, communication, task work, roles, responsibilities, and individuals' work preferences and practices. For ongoing distributed teams, encourage social development activities such as periodic face-to-face meetings and socially oriented communication.

Summary and Conclusion

There is no question as to whether or not global teams are becoming more common in the ~~global~~ workplace. As organizations work more frequently with customers across the globe, the necessity of effective global teams has become apparent. However, global teams actively face a variety of challenges due to geographic dispersion, cultural differences, and the reliance on technology for communication. These factors can hinder the development of cohesion and trust, and ultimately impact team performance and the bottom line for global organizations. Despite these challenges, global teams can create immense opportunities for organizational success if designed and implemented with these challenges in mind.

Therefore, in this chapter we sought to combine and interpret research on global teams, virtual teams, multicultural teams, distributed teams, and diversity into practical recommendations that organizations can use as a guide in the structure and design of global teams. We utilized Wildman et al. (2012) team-level characteristics framework as a means of organizing our recommendations. In doing so, we identified six practical recommendations regarding task interdependence, role structure, leadership structure, communication structure, physical distribution, and team lifespan. It is our hope that organizational leaders seek to apply these recommendations and find this ~~culmination~~ of composition-related research helpful in developing successful global teams (Table 4.2).

[AU3]

t2.1 **Table 4.2** Practical recommendations

t2.2 t2.3 Team characteristic	Recommendation
t2.4 t2.5 t2.6 t2.7 Task interdependence	For highly interdependent global teams, utilize synchronous communication tools that allow increased face-to-face interaction to promote teamwork behaviors and attitudes and supplement with less rich media as needed. For less interdependent teams, less synchronous communication tools may be sufficient
t2.8 t2.9 t2.10 t2.11 Role structure	Because global teams are operating in often unpredictable and dynamic environments, utilize divisional role structures, unless the task is highly complex or multidisciplinary in scope in which case a functional role structure may be more appropriate
t2.12 t2.13 t2.14 t2.15 t2.16 Leadership structure	Allow for the natural emergence of shared first-order leadership functions (i.e., individuals electing to take on leadership focused on maintaining existing structures and routine procedures) but concentrate second-order leadership functions (i.e., enacting and overseeing transformational activities and adaptation) within a single designated leader
t2.17 t2.18 t2.19 t2.20 Communication structure	To promote sharing of open and unique information, provide rich, synchronous media; reinforce knowledge sharing and feedback; and promote discussion surrounding cultural norms associated with communication as well as members' experiences, education, and expertise
t2.21 t2.22 t2.23 t2.24 t2.25 Physical distribution	To the extent possible, construct global teams that are fully collocated or fully distributed. If that is not possible, strive for equally sized subgroups across geographic locations; encourage active and equal communication within and between geographic locations; and ensure the leader is physically positioned in a subgroup that is equal to or larger than the others
t2.26 t2.27 t2.28 t2.29 t2.30 t2.31 Lifespan	When leading a newly formed global team, meet face to face in the beginning, if possible, and develop a charter consisting of team norms for technology use, communication, task work, roles, responsibilities, and individuals' work preferences and practices. For ongoing distributed teams, encourage social development activities such as periodic face-to-face meetings and socially oriented communication

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[AU4] ## References

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AU1	Please check for the identification of corresponding author.	
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