THE IMPACT OF TEAMS' INTERTEAM LEADERSHIP STRUCTURES ON INTRATEAM PERFORMANCE

by

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(Under the Direction of DOROTHY R. CARTER)

ABSTRACT

Responding to ever more complex and challenging work environments, organizations are increasingly relying on the collaborative efforts of larger collectives to solve organizational problems. Effective leadership in these larger systems requires members of component teams to exercise leadership not only *within* their own teams, but also *across* team boundaries (i.e., interteam leadership). However, redirecting members' attention toward interteam leadership activities could have downsides for teams. This thesis considers the potential consequences of devoting too much energy toward interteam leadership activities, by suggesting that the team-level success of component teams embedded in larger systems depends, in part, on how teams organize or 'structure' their interteam leadership activities.

INDEX WORDS: interteam leadership, leadership structure, team performance

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DEDICATION

I dedicate this thesis in memory of my beloved grandparents: Henry and Betty Maupin, and Richard and Susie Risku. I wouldn't be the woman I am today without your love and encouragement. Thank you all for watching over me, and I hope I will always make you proud.

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CHAPTER 1

INTRODUCTION

In today's complex and challenging work environments, teams are increasingly required to work interdependently with other teams in larger interdependent collectives, such as *multiteam systems* (i.e., 'MTSs'; two or more component teams who jointly pursue one or more shared superordinate goals; Mathieu, Marks, & Zaccaro, 2001) or *intergroup collaborations* (e.g., Hogg, van Knippenberg, & Rast, 2012). The overall success of these types of interdependent systems depends on the degree to which component groups or teams are able to successfully coordinate their actions and navigate their interteam interdependencies (Marks, DeChurch, Mathieu, Panzer, & Alonso, 2005). A growing body of research suggests that the achievement of shared superordinate goals in larger systems requires that at least some members of component teams contribute to leadership processes that span across team boundaries (i.e., *interteam leadership)*. Indeed, interteam leadership activities have been shown to have positive effects on superordinate goal achievement in multiteam contexts, particularly when leadership is focused on coordinating and aligning the actions of different teams (e.g., Davison, Hollenbeck, Barnes, Sleesman, & Ilgen, 2012; DeChurch & Marks, 2006; Murase, Carter, DeChurch, & Marks, 2014).

However, component teams embedded in larger systems must also strive to balance their contributions to the overall system with their achievement of 'proximal' team-level goals—or else risk the consequences of ineffective team performance.

Certainly, leadership within teams is critical to ensuring the development of the teamwork processes and emergent psychological states (e.g., trust, collective efficacy) that support team effectiveness (Burke, DiazGranados, & Salas; 2011; Morgeson, Lindoerfer, & Loring, 2010; Shuffler, Jiménez-Rodríguez, & Kramer, 2015; Zaccaro, Rittman, & Marks, 2001). Yet, the impact on team effectiveness when team members attempt to lead members of *other* teams is less well understood.

On one hand, certain benefits, including access to resources (Ancona & Caldwell, 1992) or group social capital (Oh, Labianca, & Chung, 2006) might be incurred when team members exert influence in relation to other teams. In fact, functional views of leadership include interteam leadership activities such as networking, outward monitoring, and representing one's team as fundamental aspects of 'team' leadership (Yukl, 2012). Yet, expending substantial effort on interteam, as opposed to intrateam, leadership may also have downsides for teams. Too much participation in interteam leadership may diminish the extent to which leadership can be focused on facilitating necessary processes within component teams. For example, an excess of team energy expended on relationships with entities outside of the team may reduce team cohesion (Keller, 2001). Further, for individuals who have less experience or aptitude in leadership roles, or who receive less internal support for engaging in boundary spanning relationships (Marrone, Tesluk, & Carson, 2007), interteam leadership activities may lead to role overload.

In this thesis, I suggest that the proximal success of component teams in larger systems depends, in part, on how teams organize or 'structure' their members' participation in interteam leadership activities. Specifically, I propose that the degree to

which a team's interteam leadership is *centralized*—or performed by one or a few key members—will positively predict team performance (i.e., achievement of proximal, team-level goals). Additionally, I argue that those individuals who have gained influence *within* their teams are also best suited to represent their teams in the broader system by engaging in interteam leadership.

CHAPTER 2

THEORY AND HYPOTHESIS DEVELOPMENT

Prior research has demonstrated that patterns of interteam processes, and in particular, patterns of leadership (i.e., influence processes; DeRue & Ashford, 2010), within teams and across systems, have important implications for both team and system performance (e.g., Carson, Tesluk, & Marrone, 2012; Contractor, DeChurch, Carson, Carter, & Keegan, 2012; Davison & Hollenbeck, 2012; Davison et al., 2012; Lanaj, Hollenbeck, Ilgen, Barnes, & Harmon, 2013). This thesis extends this prior work by suggesting that the *structures* of interteam leadership activities in interdependent contexts impact *team* performance.

Benefits and Drawbacks of Interteam Leadership

Leadership, defined broadly as "the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives" (p. 8; Yukl, 2002), is a foundational topic of study in the organizational sciences. Leadership has been shown to relate to a variety of organizational outcomes at individual and collective levels of observation (e.g., Bass, 1985; Dionne, Yammarino, Atwater, & Spangler, 2004; Thomas, 1988; Wang, Oh, Courtright, & Colbert, 2011; Yammarino, Spangler, & Bass, 1993). For example, meta-analytic evidence demonstrates that leadership is positively related to individuals' task, contextual, and creative performance (Wang et al., 2011), and is a

crucial predictor of organizational success (Day & Lord, 1988), competitive advantage (Grant, 1991), and team performance (Burke et al., 2011).

In research on team effectiveness, studies have often relied on a *functional* view of team leadership, conceptualizing team leadership as the process by which team leaders diagnose problems, plan solutions, and then implement solutions to those problems (Hackman, Walton, & Goodman, 1986; Zaccaro, Rittman, & Marks, 2001). For example, Fleishman and colleagues (1991) classified a variety of leadership behaviors that benefit team performance into a taxonomy encompassing information search and structuring, information use in problem solving, managing personnel resources, and managing material resources. Similarly, Yukl (2012) provides a taxonomy describing how teams need task-oriented, relations-oriented, change-oriented, and external leadership functions for team effectiveness.

In addition to leadership activities focused within teams, leadership scholars suggest that engaging with *other* teams is a crucial function of team leadership. For example, taxonomies of functional leadership behaviors clarify that effective leadership might involve seeking out relevant information about the external environment, acquiring necessary resources and assistance, and promoting the reputation and interests of the team (Fleishman et al., 1991; Yukl, 2012; Zaccaro et al., 2001). Furthermore, organizational researchers have long recognized the need for members of groups or teams—and in particular, leaders—to communicate and collaborate across group boundaries (Aldrich & Herker, 1977; Allen, 1970; Allen & Cohen, 1969; March & Simon, 1958; Schwartz, & Jacobson, 1977; Thompson, 1967).

Following previous literature, I use the term *interteam leadership* to refer to leadership activities spanning component team boundaries in larger systems (e.g., DeChurch, 2003; DeChurch & Mathieu, 2009). Interteam leadership activities have notable implications for both intrateam and interteam coordination (Ancona, 1990; Ancona & Caldwell, 1992; Davison et al., 2012; Joshi, Pandey, & Han, 2009; Marrone, 2010). In fact, Ancona and Caldwell (1992) describe task coordination with other teams (e.g., setting interteam deadlines) as a critical aspect of boundary spanning, while Marrone (2010) provides a framework delineating how cross-boundary activity may influence intrateam coordination.

Additionally, interteam leadership is important for *team-level* effectiveness in interdependent contexts (e.g., Ancona & Caldwell, 1992; Joshi, Pandey, & Han, 2009). For example, evidence suggests that influencing organizational actors outside of one's team, including top management, peers, and subordinates, is important for gaining access to essential resources and support, thereby facilitating the accomplishment of team goals (Kaplan, 1984; Katz & Allen, 1985; Kotter, 1982; Mintzberg, 1973). Thus, researchers have suggested that team leaders need to be skilled in coordinating activities, resolving disagreements, and buffering team members from outside interference in order to enhance team performance (Ancona & Caldwell, 1992). Indeed, as noted above, functional views of leadership classify these interteam leadership activities as a crucial component of team leadership.

Despite the necessity of interteam leadership for team and system-level effectiveness, engaging in interteam leadership activities may also have *drawbacks* for individuals and teams. For instance, team members who must perform different and/or

important roles both within their teams as well as across team boundaries may experience higher levels of role ambiguity and role conflict, potentially diminishing individual effectiveness (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964; Miles, 1976). Moreover, Marrone and colleagues (2007) demonstrate that activities outside of the team may contribute to role overload for both the individual and the team, which ultimately diminishes team viability. Interteam leadership activities may also inhibit intrateam processes, including team cohesion. Keller (2001) found that external communication by team members was negatively related to group cohesiveness, suggesting excessive external communication may signal an identification with outsiders, thereby weakening internal trust and performance.

Considering the Structure of Interteam Leadership

This thesis suggests that it is useful to understand how the *structure* of interteam leadership could help mitigate the potential downsides that may occur for teams when team members expend energy on interteam leadership. I suggest that by organizing interteam leadership activities into particular structures, teams may be better able to benefit from interdependence with other teams while minimizing costs (e.g., decreased team cohesion; Keller, 2001; role overload; Marrone et al., 2007).

Supporting this general assertion, prior research on groups and teams suggests that the structure of a team's external activities is relevant for understanding and predicting team (Oh, Chung, & Labianca, 2004) and multiteam outcomes (Davison & Hollenbeck, 2012; Davison et al., 2012). For instance, Oh and colleagues (2006) identified optimal structures of boundary spanning behaviors that maximize group social capital and how those accrued social capital resources ultimately improved team

effectiveness. Balkundi and Harrison (2006) provide meta-analytic evidence showing teams that are central in the total intergroup network have higher levels of team performance.

In particular, given the importance of *leadership* to a variety of individual and collective outcomes, researchers have begun to investigate the ramifications of leadership structures for team and multiteam performance (e.g., Contractor et al., 2012). For example, research stemming from theories of shared, distributed, or collective leadership in teams has demonstrated that leadership structures reflecting greater member participation in leadership roles and processes benefit team performance (Carson, Tesluk, & Marrone, 2007; D'Innocenzo, Mathieu, & Kukenberger, 2014). Small and Rentsch (2011) examined the *centralization* of intrateam leadership, finding that more *decentralized* leadership structures, where responsibility for leadership is distributed among many as opposed to fewer members (Mintzberg, 1983), were positively related to team performance. Furthermore, Lanaj and colleagues (2013) examined the impact of leadership structures on MTS performance. Their work demonstrated that decentralized leadership structures, where the function of developing system-wide plans was distributed to lower-level teams, rather than centralized in the hands of a few leaders, had *negative* effects on system performance attributable to higher levels of risk-taking and coordination failures.

Beneficial interteam leadership structures. Extending research on the structures of leadership related to collective performance reviewed in the previous section, this thesis considers the impact of interteam leadership structures on intrateam performance. Specifically, I posit that teams will be better able to capitalize on the benefits of interteam

leadership activities while avoiding the potential costs when their interteam leadership is *centralized* (i.e., performed by fewer, rather than all, team members; Mintzberg, 1983).

Centralized interteam leadership structures are likely to be beneficial for team functioning because the major role of "representing one's team" (Aldrich & Herker, 1977) is portrayed by one person; therefore, there are no conflicting identities nor interpretations of the team's needs portrayed externally. Often, formal team leaders or managers exercise this representative role, but this is not always the case (e.g., Ancona & Caldwell, 1988; Mehra, Dixon, Brass, & Robertson, 2006; Oh, Chung, & Labianca, 2004). Having a single individual (or fewer individuals) handle the responsibility for interteam leadership may provide the team more power in their external environment by having a representative who is capable of presenting a clear direction for coordinating activity across teams. Furthermore, this position of power in the external environment also likely yields higher levels of group social capital (Oh, Labianca, & Chung, 2006), which ultimately positively impacts team performance outcomes. Finally, centralized interteam leadership structures may mitigate potential downsides of interteam activity by providing role clarity for the few individuals who function across team boundaries. Based on this reasoning, I hypothesize:

Hypothesis 1: Team centralization of interteam leadership is positively related to team performance.

Second, I propose that the degree to which members of a team rely on the same individual (or individuals) for leadership both internally and externally will positively predict team effectiveness. Specifically, I suggest that this agreement, or *congruence*, between intrateam leadership and interteam leadership processes may mitigate the

possible negative effects of interteam activity, such as role conflict (Aldrich & Herker, 1977; Friedman & Podolny, 1992). If a team member is able to function in relatively similar ways, their social identity remains intact (Hogg, 2006), thus facilitating more effective interteam leadership. If a team member is able to perform in this role unencumbered, they might be able to better coordinate activities with external teams, therefore benefitting from increased access to resources and information (Oh et al., 2006). Finally, this increased access could lead to better overall team functioning and effectiveness. Therefore, I predict the following:

Hypothesis 2: Team intrateam-interteam leadership congruence is positively related to team performance.

CHAPTER 3

METHODS

Participants and Laboratory Task Procedure

I tested my hypotheses using a sample of 240 undergraduate student participants, engaged in a laboratory task called "Project BLUE," which is part of a larger study designed to uncover the drivers of multiteam effectiveness. In each of 20, 4-hour experimental sessions, 12 undergraduate student participants were randomly assigned to one of 12 unique roles in a 4-team MTS (n = 240 participants, 20 four-team systems). In total, the sample included 80 teams comprised of three people each. The majority of participants were female (67.20%), Caucasian (74.42%), and in their freshman (34.60%) or sophomore (20.70%) year in college. Additional demographic details for the sample are summarized in Table 1.

Table 1.

Demographic summary of study sample.

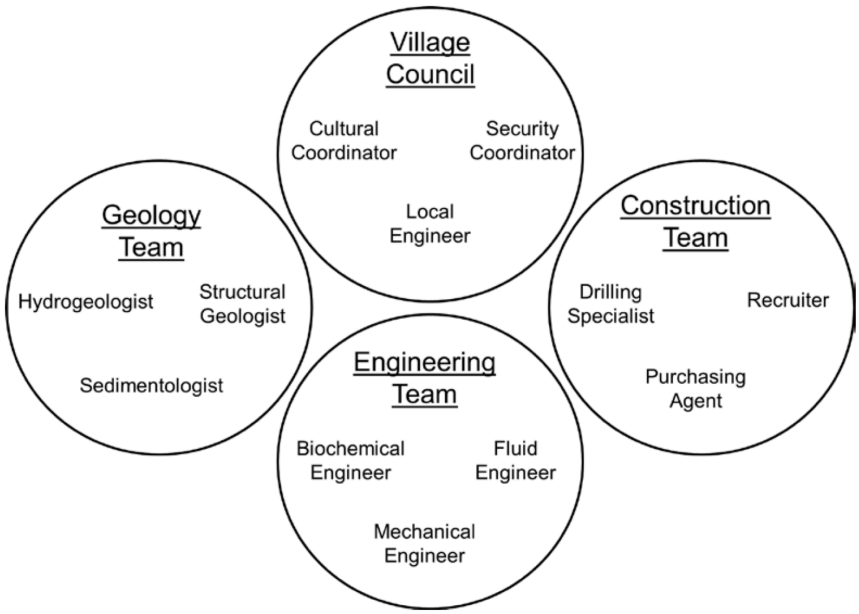
		Year in School				
	% Female	Freshman	Sophomore	Junior	Senior	Graduated
Full Sample	67%	34%	24%	21%	15%	5%
Construction Teams	62%	33%	27%	13%	23%	4%
Engineering Teams	69%	30%	23%	25%	13%	8%
Village Council Teams	67%	38%	26%	24%	12%	5%
Geology Teams	67%	37%	25%	21%	12%	5%
Race/Ethnicity	Caucasian	Afr. Amer.	Hispanic	Indian	Chinese	Other
Full Sample	74.42%	9.68%	4.50%	5.06%	3.09%	4.65%

Note. N = 20 MTSs, 80 teams, 240 individuals.

In the Project BLUE laboratory task, 12 individuals worked together to design and build a well in a fictitious region of Western Africa, referred to as the "Maji region." The task required four teams of 3 persons each—a Geology Team, an Engineering Team, a Construction Team, and a Village Council Team of local political leaders—to negotiate and share information virtually. The shared superordinate goal of the system was to develop and come to agreement on a well-building plan that had the potential to provide optimal water output to as many people as possible. Each participant performed a unique role on behalf of his or her team (MTS structure depicted in Figure 1).

Figure 1.

Participant roles in the Project BLUE Taskforce.



Each experimental session progressed in a series of three phases. First, participants were provided with information and training regarding their individual role on the Project BLUE MTS. Second, participants practiced working together with their teammates during a 30-minute team activity which required team members to integrate their individual knowledge and skills and generate a team decision related to the well project. Third, the four teams interacted during a 1-hour MTS collaboration phase requiring the four teams to integrate their unique knowledge to generate an overall plan for the design and construction of a well that provides as much clean water to as many people in the region as possible (i.e., the superordinate MTS goals). Geology Teams had information regarding the water source and depth in the region; Engineering Teams had information regarding efficient well design; Construction Teams had information necessary to build wells in different areas of the region, and Village Council Teams had information about local population centers and local concerns for the project.

Participants used a computer interface to complete all three phases of the experimental task. This interface contained information regarding each participant's role, and enabled participants to input and record his or her decisions. Once specific decisions had been entered into the system, the interface automatically created performance scores for each person, each team, and the MTS as a whole. For a depiction of the interface, see Figure 2. The interface also contained an internal chat function that enabled members of different teams to communicate (see Figure 3). Each team was located in a separate room, so team members had the ability to communicate face-to-face, but all interteam communication happened virtually through the interface's chat function. The chat window is shown in Figure 3.

Figure 2.

Project BLUE Virtual Interface.

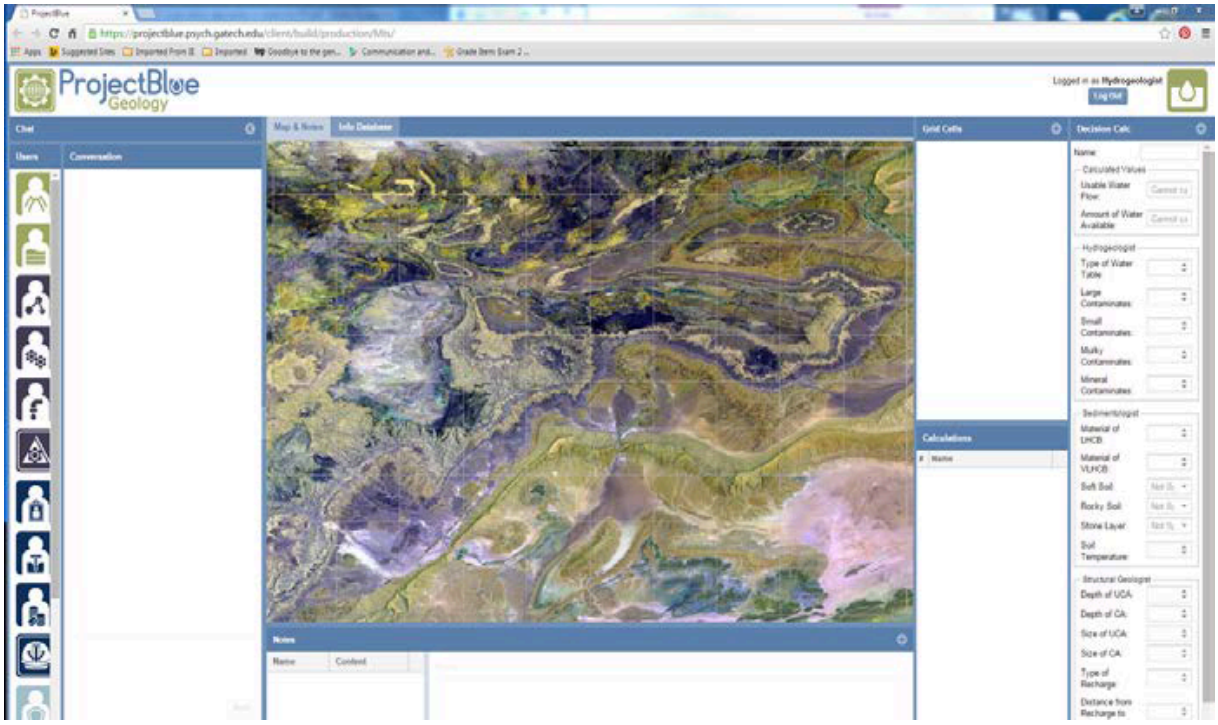


Figure 3.

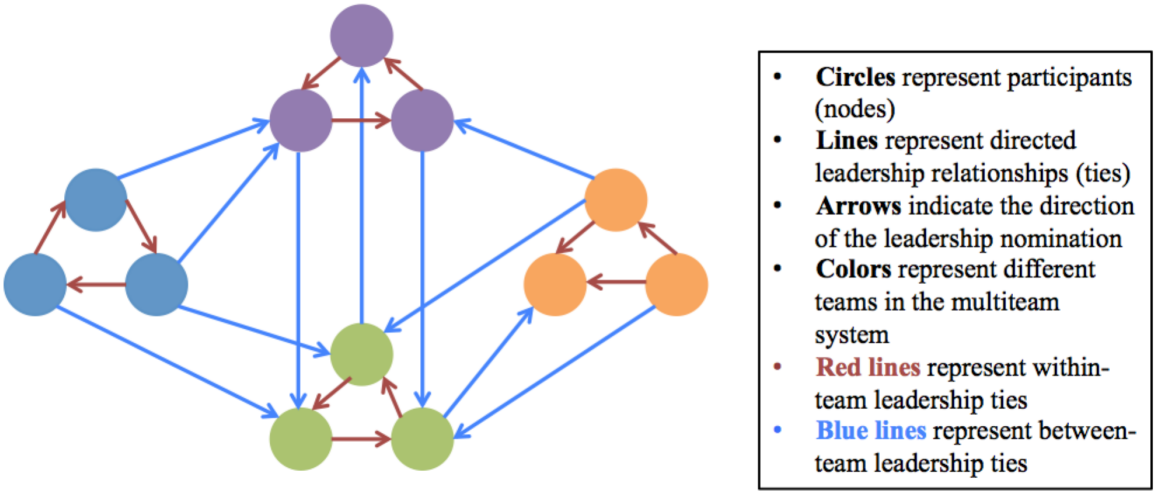
Project BLUE chat function for facilitating interteam communication.

Measures

Leadership networks. The patterns of emergent leadership relationships within and across teams (i.e., the 'leadership networks'; Carter, DeChurch, Braun, & Contractor, 2015) were identified using a sociometric (i.e., "round-robin") self-report survey approach where each participant selected others in response to the question: "Who do you rely on for leadership?" This data was then transferred into a binary network matrix where "1" indicated a leadership nomination, and "0" indicated the absence of a leadership relationship between pairs of participants. This leadership network item was adapted from the social network prompt developed by Carson, Tesluk, and Marrone (2007). See Figure 4 for an illustration of a MTS leadership network.

Figure 4.

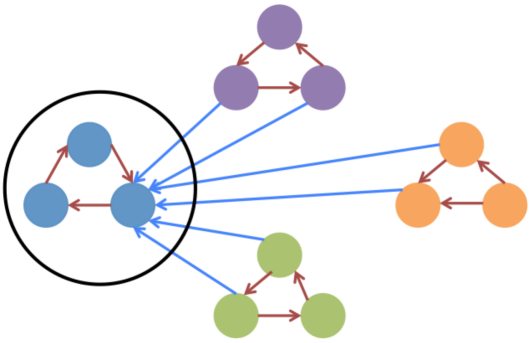
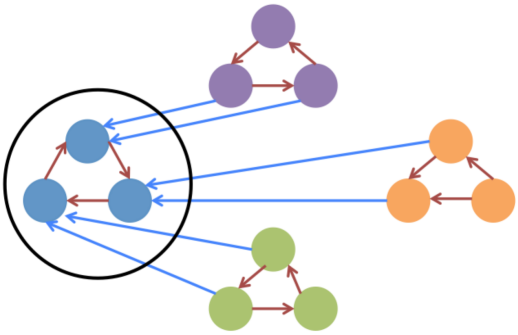
Multiteam system leadership network.



Team centralization of interteam leadership. I calculated the centralization of interteam leadership for each team based on the incoming leadership nominations from other teams in the embedding MTS. Team interteam leadership centralization reflected the *variance* in the number of incoming leadership nominations directed toward each member of a team. Team interteam leadership centralization scores ranged from 0 to 1 such that higher values indicated a more centralized interteam leadership structure (i.e., more focused toward one member of the team), and lower values indicated a less centralized (i.e., more decentralized or distributed) structure. See Figure 5 for examples of two teams with higher versus lower levels of interteam leadership centralization.

Figure 5.

Centralization of team interteam leadership.

Team with <u>High</u> Centralization of Team Interteam Leadership	**Team with <u>Low</u> Centralization of Team Interteam Leadership**
	
Majority of interteam leadership nominations go to one member of the focal team.	Interteam leadership nominations are distributed evenly across focal team members.

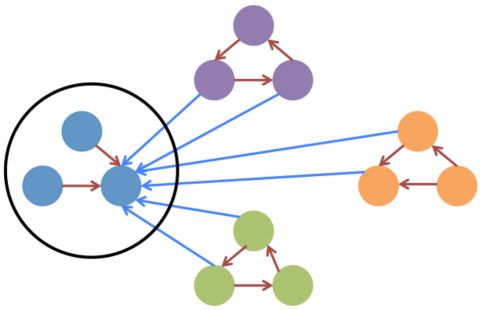
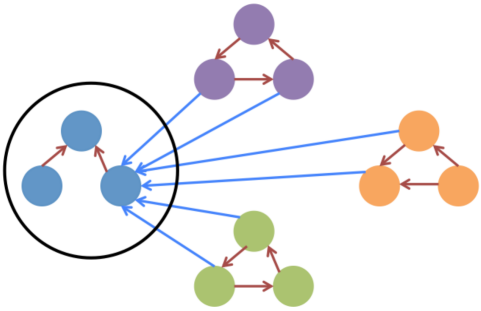
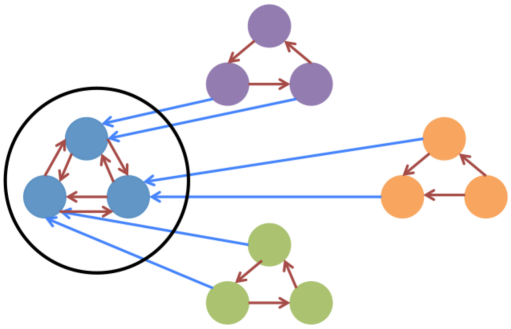
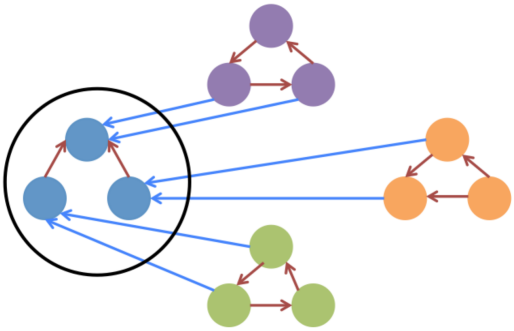
Team intrateam-interteam leadership congruence. Team intrateam-interteam leadership congruence was calculated by comparing the pattern of leadership network ties among members of a team with the pattern of leadership ties between those three team members and the members of other teams in their embedding MTS. Calculating intrateam-interteam leadership congruence was a four-step process. First, two individual scores were created for each person: (1) a score comparing the number of leadership nominations a person received from members of his or her team divided by the total number of leadership nominations among members of his or her team (i.e., an 'intrateam leadership score'); and (2) a score comparing the number of leadership nominations a person received from members of *other* teams divided by the total number of leadership nominations his or her team received from members of other teams (i.e., an 'interteam leadership score'). Second, I calculated the absolute difference between each individual's

interteam and intrateam leadership scores. Third, within each team, I averaged the absolute difference scores for the three team members. At this point, higher scores indicated a team had *less* congruence between their intrateam and interteam leadership structures, whereas lower scores indicated *more* congruence. Fourth, for ease of interpretation in analyses, this variable was reversed such that lower numbers indicate lower congruence, and higher numbers indicate higher congruence. See Figure 6 for examples of two teams with higher vs. lower intrateam-interteam leadership congruence.

Team performance. Reflecting real-world MTS contexts, the types of teams in this study each had unique team-level goals captured using distinct performance metrics. Specifically, the geology team's goal was to provide as much water to as many people as possible, the engineering team's goal was to design an innovative well that pumps a lot of water, the construction team's goal was to reduce total costs associated with the well's construction, and the village council team's goal was to maximize clean water output in comparison with overall costs. Thus, comparisons between teams of the same type could be made between study sessions (e.g., comparisons between the performance of all the geology teams), but in their original metrics, comparisons could not be made across team types (e.g., geology team performance metrics could not be meaningfully compared to village council team performance metrics). Thus, in order to be able to compare performance scores across all teams in the sample, scores I first standardized team performance scores within each type of team (e.g., standardized across all geology teams). Then, the standardized results for each type of team were combined into one team performance variable so that comparisons could be made across teams.

Figure 6.

Team intrateam-interteam leadership congruence.

A. Teams with High Intrateam-Interteam Leadership Congruence	**B. Teams with Low Intrateam-Interteam Leadership Congruence**
	
Team member nominated as both intrateam and interteam leader	One team member is nominated for intrateam leadership, another is nominated for interteam leadership
	
All team members equally nominated for providing intrateam and interteam leadership	All members are nominated for interteam leadership equally, but one member is nominated for intrateam leadership

Control: Manipulated team goal priority. I tested my hypotheses using data drawn from a larger study designed to understand the impact on multiteam functioning when component teams are focused on different goals. As part of the experimental manipulation, each of the four component teams were assigned a team priority that was intentionally more or less aligned with the MTS superordinate goal. The Geology team prioritized the superordinate goal, the village council team prioritized the superordinate

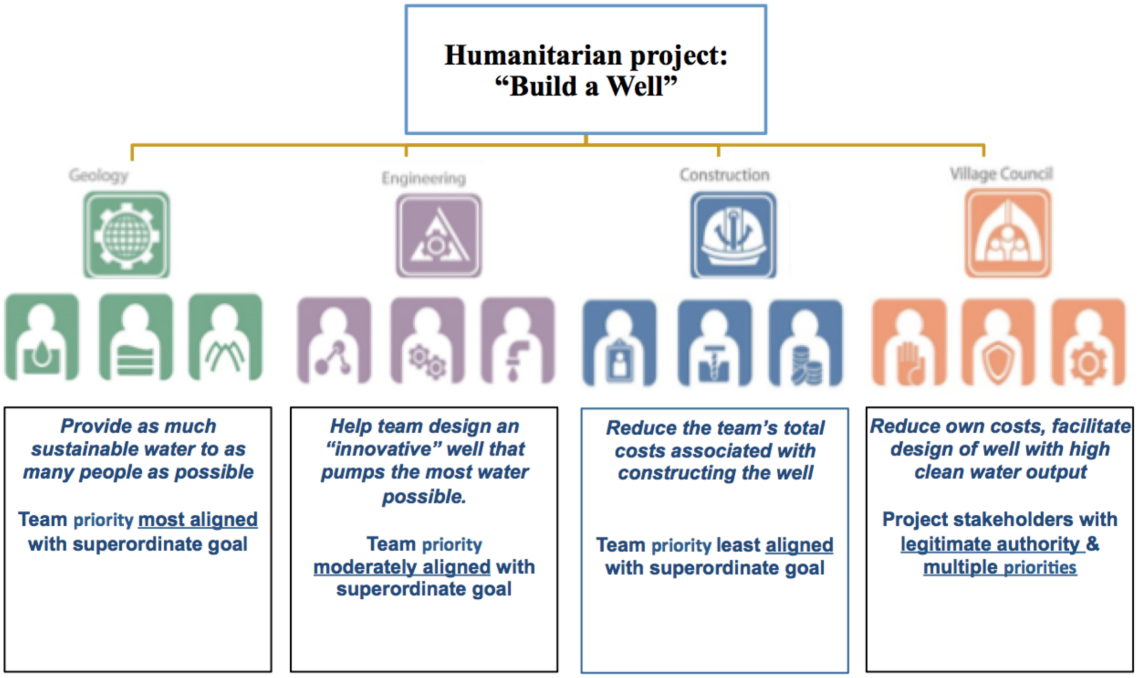
goal as well as their own individual goals (i.e., reduce individual costs), the engineering team prioritized a team-level goal that was supportive of the superordinate goal (i.e., design a well that pumps as much water as possible), and the construction team prioritized a team-level goal that was somewhat in conflict with the superordinate goal (i.e., reduce construction costs even at the expense of the superordinate goal). More detail regarding the manipulation is included in Figure 7. This experimental manipulation, which was hypothesized to impact the functioning of the system as a whole, was not the focus of the current study. I included the experimental manipulation as a control in my analyses.

Control: Ratio of incoming leadership nominations toward a team. Due to this study's use of network centrality to evaluate the centralization of interteam leadership, it is important to also account for the total number of incoming ties in the leadership network (Gockel & Werth, 2010). Therefore, I included the number of incoming ties for each team as a control variable (i.e., a measure of density with regard to a team's incoming ties) in order to isolate the effect of leadership centralization, while controlling for the total amount of interteam leadership for each team.

Additional measures. I included additional measures of individual and collective constructs in my data collection due to their potential to be considered alternative explanations for any observed effects on my study's variables. Although not the focus of this study, I conducted additional analyses (summarized in the Appendix) to evaluate the degree to which these constructs accounted for variance in team performance.

Figure 7.

Goal hierarchy for Project Blue study manipulation.



CHAPTER 4

RESULTS

Descriptive indices and bivariate correlations among study variables are summarized in Table 2. I tested my hypotheses using a hierarchical regression approach. All variables in my hypothesized model are operationalized at the team level.

Table 2.

Descriptive statistics and bivariate correlations among study variables used in regression analyses.

Variable	*1.*	*2.*	*3.*	*4.*	*5.*	*Min.*	*Max.*	*M*	*SD*
1. Manipulated Team Goal Priority	-					1.00	4.00	2.50	1.13
2. Team Incoming Ties Ratio	0.28**	-				-1.08	3.74	0.00	1.00
3. Team Centralization of Interteam Leadership	0.14	0.30**	-			0.00	4.33	0.40	0.70
4. Team Congruence of Intrateam-Interteam Leadership	0.19+	0.30**	0.03	-		0.00	0.67	0.26	0.15
5. Team Performance	0.00	0.12	0.32**	0.19+	-	-4.03	1.62	0.00	1.00

Note. $N = 20$ MTSs, 80 teams, 240 individuals.
$+ p < .10$, $* p < .05$, $** p < .01$.

Due to the nested nature of the teams in MTSs, there was the potential for teams' membership in a particular MTS to have effects on team-level performance. To evaluate

the degree to which this was the case, I began by conducting a multilevel analysis evaluating the impact of MTS membership (i.e., the teams' experiment sessions) on team performance (Snijders & Bosker, 2012; Hox, Moerbeek, & van de Schoot, 2010). Using the "lme4" package in R (Bates, Maechler, Bolker, & Walker, 2014), I estimated a two-level multilevel null model, with MTS membership predicting team performance, in order to determine the percentage of the total variance in team performance variable due to MTS membership. Results indicated that less than 1% of the total variance in team performance was attributable to MTS membership; thus, a multilevel framework was not necessary for these data (Hox, Moerbeek, & van de Schoot, 2010), and I continued my analyses using hierarchical regression.

Tests of Hypotheses

Results of my regression analyses are summarized in Table 3. In the first step of the model, I regressed team performance onto the control variables: (1) manipulated team goal priority and (2) team incoming ties ratio. As shown in the results table, the model regressing team performance on the control variables was not significant ($F_{2,77}$= 0.58, p = 0.56), accounting for a nonsignificant 1% of the variance in team performance.

Hypothesis 1 asserted that higher team centralization of interteam leadership is positively related to team performance. In the second step, I regressed team performance onto the controls and the measure of team centralization of interteam leadership. In support of Hypothesis 1, team interteam leadership centralization was a positive and significant predictor of team performance (β = 0.31, p < 0.01), accounting for an additional 9% of the variance in team performance over the controls, ($F_{3,76}$= 2.907, p < 0.05).

Hypothesis 2 posited that higher levels of congruence in team members' intrateam and interteam leadership activities is positively related to team performance. In Step 2, I added team intrateam-interteam leadership congruence to the model along with the control variables and team centralization of interteam leadership. Results indicated that team intrateam-interteam leadership congruence was not a significant predictor of team performance, but the relationship was in the expected direction ($\beta = 0.20$, $p = 0.08$).

Table 3.

Regression analyses to test hypotheses: Team performance regressed on team variables.

DV: Team Performance		β		
		Step 1	Step 2	Step 3
Controls: Manipulated Team Goal Priority		-0.03	-0.05	-0.07
Team incoming Ties Ratio		0.13	0.04	-0.02
H1: Team Centralization of Interteam Leadership			0.31**	0.33**
H2: Team Congruence of Intrateam-Interteam Leadership				0.20+
	R^2	0.01	0.10*	0.14*
	ΔR^2		0.10*	0.03+

Note. $N = 20$ MTSs, 80 teams, 240 individuals.
+ $p < .10$, * $p < .05$, ** $p < .01$.

CHAPTER 5

DISCUSSION

In today's complex and interdependent workplace, teams often have to interact with other teams toward goals that are larger and more complex than those that could be tackled by any individual team working in isolation. Research on multiteam functioning has tended to focus on the drivers of multiteam performance. However, it is also important to understand how teams can also achieve their own proximal goals while they operate within the demands of a larger system.

In particular, I assert that effectiveness *within* teams is affected by the structure of a team's leadership activities *between* teams. My results suggest that more centralized interteam leadership structures benefit team performance. Although non-significant, the relationship between intrateam-interteam leadership congruence and team performance was in the expected direction, suggesting that there may be benefits to congruence in other contexts.

Study Contributions

This study makes at least two key theoretical contributions. First, this study advances understanding of team leadership by providing initial evidence for the importance of examining patterns of leadership relationships both within and external to teams in larger systems. Although researchers have acknowledged the importance of leadership between teams within interdependent systems (Davison et al., 2012; DeChurch & Marks, 2006; Hogg, van Knippenberg, & Rast, 2012; Mathieu, Marks, & Zaccaro,

2001), research has only begun to identify the optimal ways in which these leadership relationships should be structured. For example, Davison & Hollenbeck (2012) suggest that the majority of cross-boundary activity should be performed by managers in order to allow team members to focus on complex team tasks. Furthermore, Lanaj and colleagues (2013) demonstrate that decentralized planning in MTSs can be detrimental for system performance due to coordination failures. Thus, this study expands upon these assertions and demonstrates the benefits of centralized interteam leadership for teams embedded in systems engaged in a negotiation task.

Second, this study advances understanding of teams embedded in MTSs by highlighting the importance of considering the drivers of *team* outcomes in multiteam contexts. Team performance is relevant to the study of MTSs because low-performing teams may not remain in the MTS for long if they cannot reach their team-level goals. In fact, MTS performance and team performance are distinct: the results from the initial multilevel model demonstrated that MTS membership did not account for significant variance in team performance, suggesting that team performance cannot be predicted just by examining system-level performance.

The main contribution of this thesis is to organizational theory. However, there may be some practical implications for organizations based on these findings. First, although the shared leadership literature suggests that distributed patterns of leadership within teams benefits team functioning (Carson et al., 2007; Pearce, Conger, & Locke, 2008), the results of this study suggest that centralized interteam leadership relationships relate to team performance. For team managers, this may highlight the necessity of considering the team's embedding context and interteam leadership structure in

conjunction with intrateam processes when developing team members' capacity for leadership. For example, team coaches may encourage teams to identify a specific spokesperson or 'interteam leader' to help coordinate team interactions with other teams or departments.

Study Limitations

This study has several limitations. For example, these findings result from a short-term, low-stakes laboratory experiment using undergraduate student participants. Most interdependent teams in complex systems are working together for much longer time periods and in high-stakes situations, thus there may be additional unique challenges that should be taken into account for future investigations.

Furthermore, although the intrateam-interteam leadership congruence hypothesis was in the expected direction, it was not significantly related to team performance in this study. However, there may be limitations regarding how I calculated the congruence variable because the teams in this MTS were composed of only three people each, which limited intrateam variance in leadership patterning. In the future, research could refine these results by testing intrateam-interteam leadership congruence in larger teams that have more variability in their internal structures. Moreover, there are numerous ways that intrateam-interteam congruence could be conceptualized in future studies. For example, there may be specific patterns of individual differences or social capabilities that should be congruent with patterns of interteam leadership in order for teams to be successful. Expanding these research streams may provide clearer implications for congruence in intrateam and interteam processes.

Conclusion

In conclusion, this study extends current teams and leadership research by demonstrating that the effects of teams' interteam leadership structures impact their proximal team performance. I provided a research foundation for both the study of interteam leadership structures and metrics for operationalizing these structures. Finally, this study highlights the importance of considering drivers of team performance in interdependent organizational systems.

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APPENDIX A

For comparison purposes, the following includes the results of this study when including the full list of proposed control variables. It was discussed in my research proposal meeting that other team variables aside from intrateam and interteam leadership may impact team performance, thus I included several team processes variables as controls including *team satisfaction*, *team trust*, *team cohesion*, *team information sharing*, and *team density*.

Measures: Additional Controls

Team satisfaction. Team satisfaction was measured using 3-items, and each participant responded to those items on a 5-point scale from "1" (strongly disagree) to "5" (strongly agree). The coefficient alpha for this measure is 0.96, suggesting strong reliability of the scale. An example item was "I am satisfied with my teammates."

Team trust. Team trust was measured with 8-items, and each participant responded to those items on a 5-point scale from "1" (strongly disagree) to "5" (strongly agree). The coefficient alpha for this measure is 0.94, suggesting strong reliability of the scale. An example item was "I can rely on my team not to make my job more difficult by careless work."

Team cohesion. The *team cohesion* measure was adapted from Powers (2012). Team cohesion was measured with 8-items, and each participant responded to those items on a 5-point scale from "1" (strongly disagree) to "5" (strongly agree). The coefficient

alpha for this measure is 0.97, suggesting strong reliability of the scale. An example item was "Our team has a unified vision for what we should do."

Team information sharing. Team information sharing was measured with 3-items, and each participant responded to those items on 5-point scale from "1" (strongly disagree) to "5" (strongly agree). The coefficient alpha for this measure is 0.84, suggesting adequate reliability of the scale. An example item was "My team members worked hard to keep one another up to date on their activities."

Team density. The leadership network density scores were calculated for each team to determine how many intrateam leadership ties exist out of the possible number of intrateam leadership ties that are possible. Density scores range from 0 to 1.0.

Results

Descriptive statistics and bivariate correlations for all control variables, predictors, and team performance are summarized in Table 4. The coefficient alpha for each measure is included along the diagonal, and each scale represented adequate levels of internal consistency reliability. I tested my hypotheses using a hierarchical regression approach, and the results from the regression analyses are reported in Table 5.

The hierarchical regression was conducted in three steps. In step 1, I regressed team performance onto the control variables. As shown in Table 5, the model regressing team performance onto the controls was not significant ($F_{7,72}$= 0.32, p = 0.95), accounting for a nonsignificant 3% of the variance in team performance.

In step 2, I regressed team performance onto both the control variables and the centralization of interteam leadership variable. Results indicated that team interteam leadership centralization was a positive and significant predictor of team performance (β

= 0.32, $p < 0.05$) and accounts for an additional 8% of the variance in team performance; however, the model remains nonsignificant ($F_{8,71} = 1.15$, $p = 0.34$).

Finally, in step 3, I regressed team performance onto the control variables, the centralization of interteam leadership, and the congruence of intrateam-interteam leadership. Results indicated that team interteam leadership centralization was a positive and significant predictor of team performance ($\beta = 0.33$, $p < 0.01$), and although in the expected direction, the coefficient for team congruence of intrateam-interteam leadership was nonsignificant ($\beta = 0.22$, $p = 0.07$). Adding the congruence of intrateam-interteam leadership accounts for an additional 4% of the variance in team performance; however, the model remains nonsignificant ($F_{9,70} = 1.42$, $p = 0.20$).

Table 4.

Descriptive statistics and bivariate correlations among variables used in additional regression analyses.

Variable	*1.*	*2.*	*3.*	*4.*	*5.*	*6.*	*7.*	*8.*	*9.*	*10.*	*Min*	*Max*	*M*	*SD*
1. Team Goal Priority	-										1.00	4.00	2.50	1.13
2. Team Satisfaction	0.05	*0.96*									0.00	5.00	4.23	0.65
3. Team Trust	0.04	0.89**	*0.94*								0.00	5.00	4.08	0.60
4. Team Cohesion	0.01	0.65**	0.65**	*0.97*							0.00	5.00	3.76	0.73
5. Team Information Sharing	0.09	0.79**	0.83**	0.70**	*0.84*						0.00	5.00	4.20	0.58
6. Team Incoming Ties Ratio	0.28*	0.09	0.06	0.10	0.08	-					0.00	1.00	0.23	0.21
7. Team Density	0.14	-0.04	-0.06	-0.22+	0.05	-0.11	-				0.00	1.00	0.57	0.31
8. Team Centralization of Interteam Leadership	0.14	0.21+	00.21+	0.16	0.24*	0.30**	-0.11	-			0.00	4.33	0.40	0.70
9. Team Congruence of Intrateam-Interteam Leadership	0.19+	-0.10	-0.09	-0.01	0.03	0.30**	0.03	0.03	-		0.00	0.67	0.26	0.15
10. Team Performance	0.00	0.08	0.07	0.13	0.07	0.12	-0.07	0.32**	0.19+	-	-4.03	1.62	0.00	1.00

Note. $N = 20$ MTSs, 80 teams, 240 individuals. Reliability coefficients for each scale included in italics on the diagonal.

+ $p < .10$, * $p < .05$, ** $p < .01$.

Table 5.

Regression analyses to test hypotheses and additional variables: Team performance regressed on team variables.

DV: Team Performance				
			β	
Control Variables:		Step 1	Step 2	Step 3
Team Goal Priority		-0.03	-0.05	-0.07
Team Satisfaction		0.03	0.01	0.06
Team Trust		-0.02	-0.03	0.01
Team Cohesion		0.13	0.16	0.16
Team Information Sharing		-0.03	-0.10	-0.18
Team Incoming Ties Ratio		0.11	0.03	-0.03
Team Density		-0.03	0.01	0.01
H1: Team Centralization of Interteam Leadership			0.32*	0.33**
H2: Team Congruence of Intrateam-Interteam Leadership				0.22+
	R^2	0.03	0.12	0.15
	ΔR^2		0.09*	0.04+

Note. N = 20 MTSs, 80 teams, 240 individuals.

+ $p < .10$, * $p < .05$, ** $p < .01$.