ABSTRACT

Title of Dissertation: CUTTING ACROSS TEAM BOUNDARIES:
                           ANTECEDENTS AND IMPLICATIONS OF
                           INDIVIDUAL BOUNDARY SPANNING
                           BEHAVIOR WITHIN CONSULTING TEAMS

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Boundary spanning activities, or external team processes such as establishing and

managing relationships with key external parties to the team, are critical to the success of

many organizational work teams. Surprisingly, however, while the performance benefits

of team boundary management have been documented in several seminal pieces by

Ancona and her colleagues (e.g., Ancona, 1990; Ancona & Caldwell, 1992), little

research has directly explored the role of the individual team members in carrying out

these critical activities or if performance benefits exist for those engaging in boundary

management for their teams.

My dissertation addresses these limitations by considering potential predictors

and consequences of individual boundary spanning behavior within a team setting. By

investigating several personal and motivational antecedents to boundary spanning, I seek

to expand previous teams research by predicting why particular team members engage in

critical boundary spanning behaviors. Furthermore, complementing existing support for

the performance benefits accompanying boundary management at the team level of

analysis, I explore the consequences of boundary spanning on individual level outcomes, namely, peer ratings of individual leadership and contributions to the team. Finally, I present two sets of alternative hypotheses postulating a mediating and a moderating role for information network centrality in the boundary spanning behavior-individual outcome relationship.

Hypotheses for this dissertation were tested using data from 27 consulting teams, comprised of 171 full-time MBA students. Data were collected primarily through surveys administered to team members at multiple points in time and were analyzed via hierarchical linear modeling, regression, and social network techniques.

Results indicated partial support for the predictive value of self-monitoring, proactive personality, and boundary management self-efficacy on an individual's engagement in boundary spanning behaviors within their team. Additionally, boundary spanning directed toward clients and general scanning / scouting of the environment showed strong relationships with peer ratings of individual leadership and contributions, revealing that those engaging in boundary spanning behaviors were highly valued team members. Interestingly, the relationships between these boundary spanning behaviors and individual outcomes were fully mediated by information network centrality. Theoretical and practical implications are discussed.

CUTTING ACROSS TEAM BOUNDARIES: ANTECEDENTS AND
IMPLICATIONS OF INDIVIDUAL BOUNDARY SPANNING BEHAVIOR
WITHIN CONSULTING TEAMS

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Dissertation submitted to the Faculty of the Graduate School of the
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Dedication

In loving memory of Vincent Giardina and Dr. Stephanie Franchak – two special people who have touched the lives of many and will forever remain as great sources of inspiration to me.

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Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction

Advances in technology, flatter organizational structures, and global competition have resulted in increasingly complex and dynamic work environments (Rousseau, 1997). Organizations navigating through these turbulent environments are responding in a variety of fashions. In particular, more and more organizations are utilizing team-based approaches to meet their changing business demands (Morhman, Cohen, & Morhman, 1995). High performing teams are able to effectively accomplish interdependent and complex tasks by distributing work across members, sharing knowledge and expertise, and monitoring each other's performance and behaviors (Mathieu, Goodwin, Heffner, Salas, & Cannon-Bowers, 2000).

Recent teams research has increasingly emphasized the dynamic challenges and performance demands placed upon "externally dependent" work teams. Externally dependent work teams are tightly linked to their external environment as the team's overall performance is highly contingent upon the successful management of a variety of external factors, such as meeting customer demands, acquiring and leveraging key sources of external information, and coordinating across multiple external stakeholders (Ancona, Bresman, & Kaeufer 2002). In particular, as a result of continual shifts to flatter organizational structures and networked approaches to organization (Choi, 2002), teams are increasingly responsible for coordinating complex efforts across a multitude of organizational functions (Ancona et al., 2002; Ancona & Caldwell, 1998). In order to meet such challenges, teams must span boundaries (both within and outside of their organization) and maintain high levels of interactions with critical external parties, such

as clients, suppliers, internal management, and other work teams (Ancona et al., 2002; Choi, 2002).

Reflective of these demands, the performance benefits associated with *team boundary management* have been documented in several seminal pieces (e.g., Ancona, 1990; Ancona & Caldwell, 1992). Team boundary management represents *external* team processes and is conceptualized as the team's efforts to collectively manage relationships with the environment (Ancona, 1990; Ancona & Caldwell, 1992; Gladstein, 1984). These efforts predominately include interacting with key external linkages (e.g., for the purposes of obtaining feedback regarding team activities, negotiating task demands, soliciting support), coordinating activities across several inter- and intra-organizational groups, and scanning the environment for general and technical information (Ancona, 1990; Ancona & Caldwell, 1992). Studying primarily new product development and cross-functional project teams, this work has revealed that team strategies and actions towards managing the external environment coincide with higher performance. Interestingly, findings have suggested that not only are external team processes positively linked to team performance, but also for certain types of teams (e.g., externally dependent teams such as new product development and consulting teams) this link is stronger than the relationship between internal team processes and team performance (Ancona, 1990). However, several gaps still exist in our understanding of boundary spanning behavior within the team context.

First, while previous research has uncovered the importance of *team* boundary spanning processes within externally dependent teams, relatively little is known about how to compose teams to enhance their boundary spanning capability (Ancona &

Caldwell, 2000). For instance, researchers have not yet addressed the role of individual

characteristics that predict engagement in boundary management activities (Ancona &

Caldwell, 1990; 1999). Given the purported importance of boundary spanning to team

success, it is surprising that little is known about the factors that predict engagement in

these critical behaviors. Interestingly, Ancona and Caldwell (1992) did capture

individual boundary spanning behavior, however these ratings were aggregated to the

team level of analysis, ignoring any between person variance. Furthermore, in a recent

study, Druskat and Wheeler (2003) found that effective leaders of self-managing work

teams engaged in a variety of boundary spanning activities for their teams.

Unfortunately, this study did not explore potential antecedents to boundary spanning

behavior.

Second, research to date has not directly examined the implications of a team

member's engagement in boundary management. Given that boundary spanning is a

critical activity for the team, it is plausible that those team members engaging in such

important behaviors are perceived as highly valuable team members by their peers

(Tushman & Scalan, 1981a: 1981b).   While related research provides evidence that

engagement in boundary spanning activities has positive benefits for leaders (e.g.,

Druskat & Wheeler, 2003) and organizational managers (e.g., Tushman & Scanlan,

1981a; 1981b), the consequences stemming from this behavior for individuals in a *team

context* have not been investigated (Ancona & Caldwell, 1999). Such an exploration is

noteworthy considering that both reputation and perceived value within the team are

likely to have important consequences for career advancement and promotion

opportunities, particularly within professional services and consulting organizations

employing large numbers of externally-dependent teams. Naturally, if boundary spanners are consistently rated as effective and valued performers, it will be those same individuals that are selected for prestigious team projects and identified as "key" employees for future managerial positions, which often require even higher levels of external relationship skills. Finally, aside from these career benefits, studying the potential individual outcomes associated with engaging boundary spanning activity is important to understanding the potential ramifications for team member satisfaction and motivation to continue these critical efforts in the future.

Accordingly, the primary objectives of this proposal are to examine the factors influencing individual boundary spanning behavior and to explore the relationships of these behaviors with various performance outcomes at the individual level of analysis. I begin with a consideration of individual difference variables that are likely to facilitate engagement in boundary spanning. These characteristics reflect both dispositional and motivational predictors, including personality variables such as self-monitoring and proactive personality, as well as motivational influences including self-efficacy and instrumentality of the team's project in achieving valued gains. Next, anticipated linkages among engagement in boundary spanning behavior and peer ratings of individual leadership and contributions to the team are discussed and proposed. And finally, I explore the role of information network centrality to further explain the hypothesized boundary spanning-individual outcome relationship.

In this dissertation, I draw from a sample of consulting teams contracted for a 3 month long, intensive consulting engagement. Teams are engaged by various local and regional organizations to solve an authentic business problem or need. Furthermore, the

teams are cross-functional in their professional expertise as well as diverse in their

demographic characteristics, which provides a breadth of knowledge and experience to

stimulate high quality and innovative decision making (e.g., Simons, Pelled, & Smith,

1999). Finally, the teams are primarily self-managing, but do report to faculty advisors

for updates and guidance as needed. Given time pressures, changing client expectations,

and potentially pressing advisor expectations, these teams face a variety of external

demands. Accordingly, team member engagement in specific boundary spanning

behaviors will help the team to manage such contingencies, fulfill information gathering

requirements, and is anticipated to be a critical aspect of the team's overall effectiveness.

In summary, this dissertation extends previous research by providing a finer-

grained approach for understanding the facilitators and consequences associated with

boundary management processes. In particular, while existing studies have recognized

the importance of external team processes from the vantage point of the team as a

collective unit (Gladstein, 1984), the current dissertation serves as a first step towards

further understanding the operation of this function at the individual level of analysis. To

that end, the antecedents to team member engagement in boundary spanning behavior as

well as the performance implications associated with such behavior are investigated and

tested within a sample of consulting teams.

Overview of Chapters

In Chapter 2, I first define and discuss the nature of individual boundary spanning

behavior. Hypotheses regarding the antecedents and outcomes of boundary spanning

behavior are then presented, including two sets of alternative hypotheses exploring

potential mediating and moderating roles of information network centrality in the boundary spanning-outcome relationship.

In Chapter 3, I describe the research methods utilized to conduct this dissertation. The nature of my sample, data collection procedures, measures used, and data analysis tools are discussed in this chapter.

Chapter 4 presents the results of my tests of all hypotheses. Results of the preliminary analyses (e.g., descriptive statistics) as well as primary analyses involved in hypothesis testing (via hierarchical linear modeling, ordinary least squares regression, and social network analysis) are described.

In Chapter 5, I conclude this dissertation with a summary and interpretation of major findings. Following this discussion, I present the study's contributions in terms of theoretical and practical implications, outline study limitations, and provide avenues for future research.

Chapter 2: Theoretical Background and Hypothesis Development

In this chapter, I draw upon previous research conducted on boundary spanning

processes (predominately at the team level of analysis) to conceptualize and define

individual boundary spanning behavior. I then present a hypothesized model of the

antecedents and consequences of individual boundary spanning behavior, followed by a

detailed description of the supporting rationale for the proposed relationships.

Conceptualizing Individual Boundary Spanning Behavior

Drawing upon previous research on team boundary management (e.g., Ancona &

Caldwell, 1992) as well as past studies exploring organizational level boundary spanning

(discussed in more detail below), individual boundary spanning within a team context is

defined as team member behaviors intended to establish relationships or interactions with

external actors that can assist the team in meeting overall project objectives. Several

points of emphasis are important to this conceptualization. First, individual boundary

spanning behavior involves connecting to an external *actor*. Following previous research

(e.g., Ancona & Caldwell, 1992), this type of activity heavily involves communication

and relationship building skills and as such, scanning the environment via Internet

searches, for example, is outside the scope of individual boundary spanning.

Secondly, individuals who engage in boundary spanning activities exert efforts to

establish a *connection* or *relationship* with external parties. Therefore, this behavior is

reflected in the interactions and exchanges between the boundary spanner and the

external party. Following previous research conducted by Ancona and colleagues (e.g.,

Ancona & Caldwell, 1992), these may range from superficial external contacts (perhaps

for the purposes of environmental scanning) to more intensive interactions (perhaps for the purposes of obtaining resources, representing the team, or negotiating project scope). Supporting the potential range of interactions and exchanges, related work conducted at the organizational level has suggested that organizational boundary spanners provide at least two primary functions: 1) an information processing function, through which the individual scans, interprets, and translates information to the organization from the external environment and 2) an external representation function, through which the individual selectively emits organizational information to key external groups in an effort legitimatize the organization (Aldrich & Herker, 1976; Tushman, 1977).

Lastly, individual boundary spanning behavior is directed towards *task- or team-related issues* in an effort to facilitate team goals and objectives. Accordingly, only those external connections that are carried out with the intent to assist the team in coordinating or completing their work are within the scope of individual boundary spanning behavior. In this capacity, boundary spanners may function as key information gatherers, scanning the external environment for general and technical information, interpreting and filtering such information, and finally, transmitting it to the team in an effort to facilitate team progress (Hansen, 1999). Additionally, members who span across team boundaries may also serve as critical players in buffering, representing, and coordinating the team's actions to and from various external parties to help ensure the overall success of the team (Ancona & Caldwell, 1992).

In summary, individual boundary spanning encompasses the various activities through which team members seek connections with important external actors in efforts to actively manage the team's external environment (Ancona & Caldwell, 1992).

Specific behaviors include establishing and maintaining relationships with critical external parties, seeking advice and feedback from outsiders on team progress, scanning the environment for technical information and project-related resources, and coordinating team activities with other external groups or constituencies (see Ancona, 1990; 2002; Ancona & Caldwell, 1992). Spanning across team boundaries reflects a focus on the part the boundary spanner to engage and attend to the external team processes required to successfully compete their projects. Such activities allow for diversity in the information obtained and leveraged by team members (Hansen, 1999), opportunities to negotiate project expectations and requirements (Ancona, 1990), and coordination and collaboration across a variety of external sources (Ancona & Caldwell, 1992).

Model Overview

Figure 1 (presented on the following page) illustrates my hypothesized model, which incorporates both potential antecedents and outcomes of individual boundary spanning behavior. Three primary research questions are addressed through this model and are discussed throughout the following sections. My first research question considers "What factors influence engagement in boundary spanning behaviors within a team?" To examine this question, I explore individual differences variables as well as motivational influences.

FIGURE 1.

Hypothesized Model

H1-H4

H5

Individual Differences:
- Self-monitoring
- Proactive Personality

Motivational Factors
- Self-efficacy
- Project Instrumentality

Individual Boundary Spanning Role Behavior

Individual Outcomes
- Contributions to the team
- Internal leadership
- Status and influence

H7

H6

H6

Information Network Centrality

10
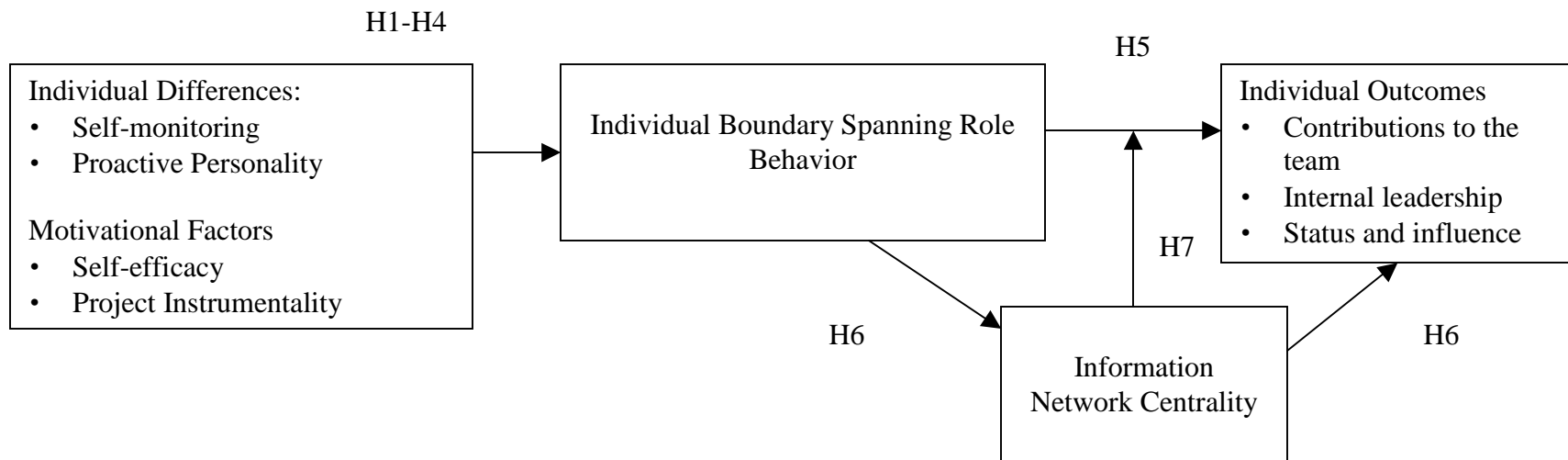
My second research question asks, "What are the implications of boundary spanning behaviors for individual level outcomes?" Drawing primarily upon social capital theory (Nahapiet & Ghoshal, 1998) and social network perspectives (e.g., Brass, 1984; Burt, 1992), I hypothesize that boundary spanners realize important benefits as a result of their behaviors. Specifically, I argue that those engaging in boundary spanning activities are perceived by their teammates as internal leaders and strong contributors to their projects.

The third and final research question seeks to gain a finer-grained understanding of the potential linkage among engagement in boundary spanning behavior and individual outcomes. This research questions asks, "What role does social network centrality play in explaining the boundary spanning-individual outcome relationship?" To address this question, I draw upon classic social network arguments as well as previous boundary spanning research to present two sets of alternative hypotheses asserting network centrality as a mediator and a moderator to the boundary spanning behavior-outcome relationship. Each set of hypothesized relationships is discussed in more detail in the following sections.

Antecedents to Boundary Spanning Behavior

I explore four potential antecedents to engagement in boundary spanning behavior. I begin first with a consideration of two personality variables that are likely to predict such behavior: self-monitoring and proactive personality. Next, I consider the influence of two motivational factors in facilitating boundary spanning: boundary

management self-efficacy and perceived instrumentality of the team project in obtaining valued outcomes.

Self-monitoring. According to self-monitoring theory (Snyder, 1979), individuals differ in the degree to which they monitor and censor themselves in social situations. High self-monitors are agile actors possessing the ability to effectively monitor a social situation and present themselves in a manner compatible with what is called for in a particular circumstance (Snyder, 1979; 1987). In contrast, low self-monitors persist in being themselves and do not rely on cues from their environment to guide their behaviors. Unlike high self-monitors, low self-monitors are concerned with expressing their own inner attitudes and emotions rather than tailoring such expressions to the current situation (Snyder, 1979; 1987). This skill in "reading" social situations and excelling in social interactions has been suggested as a primary reason why high self-monitors often emerge as group leaders (Zaccarro, Foti, & Kenny, 1991). Additionally, since these individuals are able to tailor their behavior across a variety of situations, high-self monitors tend to be connected to a diverse set of social groups and are more likely to link distinct groups, both in their professional and personal worlds (Mehra, Kilduff, & Brass, 2001).

I anticipate that individuals who are high in self-monitoring are more likely to engage in boundary spanning behavior than individuals who are low in self-monitoring. The social skills of high self-monitors are important for boundary spanners to establish and cultivate effective relationships across a variety of situations. Further, in social settings, it has been suggested that high self-monitors tend to choose a diverse set of social connections, in contrast to low self-monitors who prefer a homogenous groups of

friends and colleagues with which they can be themselves (Snyder, 1987). Accordingly, high self-monitors are more likely to occupy social network positions, such as boundary spanners, which serve as bridges connecting multiple disconnected parties (Mehra et al., 2001).

A recent study by Mehra and colleagues (2001) revealed that high self-monitors not only occupied roles in which they connected diverse individuals, but also established a wider network of friendship ties in their organization than did low self-monitors. Although this study did not directly relate self-monitoring to engagement in boundary spanning behaviors within a team, it provides indirect evidence that high self-monitors behave in ways consistent with those exhibited by boundary spanners (e.g., extending across social groups to establish connections with external parties). Accordingly, the following hypothesis is presented:

Hypothesis 1: Self-monitoring will be positively related to individual boundary spanning behavior.

Proactive personality. Proactive personality, as defined by Crant (2000), refers to an individual's propensity to engage in proactive behavior, that is, to take action to influence their environments. This construct was initially introduced by Bateman and Crant (1993) to depict differences among individuals in the degree to which they search out opportunities and strive to challenge and modify their current surroundings. Proactive individuals actively identify opportunities to make change and are likely to persist until such changes have occurred. In contrast, less proactive individuals fail to search out and identify opportunities for change and rather passively adapt to the status quo. Recent work suggests that proactive personality relates to positive work

13

performance, objective and subjective career success, and leadership effectiveness (Crant, 2000; Crant & Bateman, 2000; Seibert, Crant, & Kraimer, 1999).

It seems likely that proactive personality is an important individual difference factor related to the engagement in boundary spanning behavior. Compared to those who are less proactive, team members with a strong proactive personality will be more likely to perceive the team's external surroundings as an environment in which they can actively search for opportunities to enact change.

While proactive personality has not been explicitly linked to boundary spanning behavior in previous research, related work investigating the tendency to engage in proactive behavior provides some support for this hypothesized relationship. In particular, individuals possessing proactive personality have been shown to exhibit a variety of behaviors that closely parallel those behaviors exhibited by boundary spanners. For example, investigating proactivity during newcomer socialization experiences, Wanberg and Kammeyer-Mueller (2000) noted that more proactive newcomers engaged in higher levels of active information seeking, feedback seeking, and relationship building. Additionally, Crant's (2000) theoretical framework asserts proactive personality as one important predictor of actual proactive behavior, including active feedback seeking, issue selling, and career management. Boundary spanners must engage in similar behaviors. For instance, relationship building and issue selling behaviors can be instrumental in the establishment and maintenance of external contacts (see Crant, 2000, for a review). Additionally, boundary spanning roles require individuals to proactively seek out task related information and relevant feedback from a

variety of external sources, such as clients, other teams, and professional colleagues.

Accordingly, I propose the following hypothesis:

Hypothesis 2: Proactive personality will be positively related to individual

boundary spanning behavior.

Self-efficacy. Self-efficacy is conceptualized as task-specific confidence,

reflecting an individual's beliefs in his or her ability to succeed at the current task at-hand

(Bandura, 1997). Considerable support exists for the relationship between self-efficacy,

actual behavior, and individual performance outcomes (see Bandura, 1997). Highly

efficacious individuals tend to perceive challenging situations as opportunities rather than

obstacles, set higher goals for themselves, and persist longer in the face of setbacks than

do those with lower self-efficacy (Bandura, 1997). Not surprisingly then, self-efficacy

has been positively linked to a number of performance outcomes across a variety of

situations, ranging from task performance, to negotiation success, to career choices (see

Bandura, 1997 for a review).

Since self-efficacy is task-specific it is important to clearly define the relevant

task domain when discussing and assessing perceived self-efficacy. In the current

proposal, I am specifically interested in an individual's confidence in his or her ability to

successfully establish and manage relationships within important external parties to the

team. Highly efficacious individuals are confident that they have the ability to establish

and maintain a good rapport with external parties and the skills to effectively manage a

variety of external opportunities and obstacles impacting the team. Furthermore, they

perceive demands and challenges associated with boundary spanning as opportunities in

which they can excel rather than obstacles to be avoided. Accordingly, these individuals

will be motivated to take on these challenging roles and will persist in them even in the face of minor setbacks.

According to Bandura (1997), efficacy beliefs not only affect individual thought processes, persistency, and motivation, but also influence affective states. This last domain is also relevant to the relationship of self-efficacy and boundary spanning behavior, as managing external linkages can be a highly stressful and anxiety-producing task (Aldrich & Herker, 1976). Individuals with high self-efficacy are confident in their ability to control negative and otherwise harmful emotional reactions that often arise during challenging and taxing situations. Accordingly, those that believe strongly in their ability to successful engage in boundary spanning activities will be better equipped to keep their anxiety in check and reduce their stress levels. Although not explicitly addressing boundary spanning, a recent piece investigating negotiation success affirmed that self-efficacy mitigates the impact of adverse negative emotions, such as anxiety and stress, on negotiation performance (O'Conner & Arnold, 2001). Accordingly, I propose the following hypothesis:

Hypothesis 3: Self-efficacy in one's ability to successfully establish and manage external relationships will be positively related to individual boundary spanning role behavior.

Instrumentality of the project. I anticipate that those team members actively managing team boundaries also perceive their team's project to be instrumental in obtaining a variety of valued outcomes (Vroom, 1964). Based upon expectancy theory assertions, the motivation to expend effort depends not only the individual's beliefs in his or her ability to carry out such efforts, but also in one's perceptions of the probability that

16

their effort will lead to valued outcomes (Porter & Lawler, 1968; Vroom, 1964). Since boundary spanning is a critical team function, I expect that team members who are highly motivated by their team's task and enthusiastic about their consulting engagement are more likely to actively take on roles and responsibilities that are central to the overall performance of the team. Accordingly, one's perceptions about the value and instrumentality associated with their consulting engagement is likely to be an influential force in predicting engagement in critical boundary spanning role behaviors (Vroom, 1964).

Several potential motivations may exist for engaging in critical team functions. For instance, team members may view their current project as a desirable way to obtain valuable external connections resulting in potential future career avenues. Individuals likely vary in their beliefs of the importance of external network ties in promoting future career options, with some perceiving external networks as a valuable "web" of relationships providing information, support, and assistance throughout their careers. These individuals may similarly hold the view that career progression and success are largely determined by "who you know." Indeed, the linkages between social network ties and career outcomes, such as negotiation of salaries and work performance, have been suggested in some recent empirical work (e.g., Mehra et al., 2001; Seidel, Polzer, & Stewart, 2000). Accordingly, I anticipate that team members believing that their team project provides an avenue for establishing valuable external connections will take on critical boundary spanning roles. Team members not subscribing to such beliefs may simply not be motivated to expend the effort and resources necessary to actively participate in important team activities such as boundary spanning.

In addition to aspirations of personal career success, individuals may be motivated by beliefs that their consulting project will provide them with valuable technical expertise and / or general knowledge. Potential gains in knowledge may range from broad business knowledge to highly specialized knowledge within a particular industry or technical domain. Those who recognize the importance of their projects in obtaining these valued personal and professional gains are also likely to engage in critical team activities and behaviors and adopt key boundary spanning roles within the team. Accordingly, the following hypothesis is proposed:

> Hypothesis 4: Perceived instrumentality of the project will be positively related to individual boundary spanning behavior.

Implications of Boundary Spanning Behavior on Individual Outcomes

I turn next to a consideration of the potential outcomes associated with boundary spanning activities. I hypothesize several advantages associated with the engagement in boundary spanning behaviors, arguing that these behaviors lead to increased contributions to the team, enhanced leadership presence, and higher status and influence within the team.

Individual contributions to the team, leadership, and influence. Social capital theory (Nahapiet & Ghoshal, 1998) provides strong support for the benefits associated with boundary spanning roles. Social capital refers to the resources embedded within one's network of social relationships, including the assets available from the social network unit itself (Nahapiet & Ghoshal, 1998). Developing relationships and social ties with key external parties provides a web of valuable resources for boundary spanners,

such as the creation of linkages to other important social actors, the development of trust and social support, and the exchange of information (Nahapiet & Ghoshal, 1998). Accordingly, team members who are connected to critical external sources, such as clients and other business professionals, can access a wealth of social and information capital that can translate into positive gains for the individual. Specifically, because a boundary spanner is able to manage external contingencies, obtain critical project information from outside of the team, and utilize external contacts to help direct and gauge team progress, it is likely that he or she will be perceived as contributing substantially to the overall performance of the team (e.g., Hansen, 1999; O'Reilly, 1977; Tushman & Scanlan, 1981a; 1981b).

Given the advantages in terms of social ties and accessible informational resources, it is also quite plausible that their peers will perceive boundary spanners as internal team leaders. Individuals occupying boundary spanning roles have access to pertinent external information relevant to the team's task. Accordingly, when transmitting this information back into the team (Hansen, 1999; Tushman & Scanlan, 1981a; 1981b), boundary spanners play a visible role in establishing and monitoring the overall direction of the team. Additionally, in order for boundary spanners to effectively manage environmental contingencies, such as representing the progress of the team to external parties and obtaining resources from outside of the team (Ancona, 1990; Ancona & Caldwell, 1992), it is necessary for these individuals to have a strong sense of the operations and functioning of the team itself. Thus, these team members will likely engage in several primary leadership functions, particularly monitoring team progress and evaluating team actions (Hackman & Walton, 1986). Accordingly, it seems

plausible that team members engaging in boundary spanning behaviors will therefore be perceived as internal team leaders by their peers.

Finally, in addition to perceived individual contributions and internal leadership, those engaging in boundary spanning behaviors are likely to gain status and influence in their teams. Drawing upon structural position and social network perspectives (Brass, 1984; Ibarra & Andrews, 1993), individuals with established connections to key external parties have a structurally advantageous position, occupying the bridge that connects disconnected others (Burt, 1992). Thus, boundary spanners hold key structural positions in that they link other team members to critical external parties, such as clients, supervisors, and other professionals, through which the team can gain needed information and resources. These structural bridges provide unique sources of power to the boundary spanner as project-related information and other resources flow from external sources to the boundary spanner (Burt, 1992). Accordingly, other team members are often dependent upon boundary spanners for access to these critical resources and, in congruence with resource dependency theory assertions, such dependency translates into increased influence of the boundary spanner (Pfeffer & Salancik, 1978). Evidence for the benefits of structural bridges has been touted in a number of previous studies (see Burt, Jannotta, & Mahoney, 1998 for a review).

In summary, I anticipate that resulting from increased access to social capital and valuable informational resources, teams members engaging in boundary spanning activities can enhance their contributions to the overall success of the team. Furthermore, in carrying out these critical boundary spanning roles, these individuals are likely to display strong internal leadership, through their efforts in directing, monitoring, and

evaluating the team. Finally, boundary spanners are also likely to exhibit more prominent status and influence within their teams as compared to other team members who do not hold such structurally advantageous positions. Accordingly, I proposed the following hypotheses below:

Hypothesis 5a: Individual boundary spanning behavior will be positively related to individual contributions to the team as perceived by other team members.

Hypothesis 5b: Individual boundary spanning behavior will be positively related to internal leadership as perceived by other team members.

Hypothesis 5c: Individual boundary spanning behavior will be positively related to member status and influence as perceived by other team members.

The Role of Information Network Centrality

In the following sections, I present two sets of alternative hypotheses to explore the role of information network centrality in the linkages among boundary spanning behavior and individual outcomes.   I first briefly discuss the concept of network centrality. I then examine the role of network centrality as a potential mediator and as a potential moderator in the boundary spanning-outcome relationship.

The concept of network centrality is advanced from social network theory and seeks to capture the extent of an individual's access to resources through numerous connections within their unit (Brass, 1984; Ibarra & Andrews, 1993; Sparrowe, Liden, Wayne, & Kraimer, 2001). It is important to emphasize that this conceptualization of network centrality exists at the individual level of analysis, reflecting the number of ties team members report having with the focal individual (see Sparrowe et al., 2001). It is

also important to note that social network researchers generally distinguish among multiple types of internal networks. I follow previous work focused on organizational boundary spanning (e.g., Tushman & Katz, 1980) and emphasize *information type networks*, or the communication and exchange of project-related information and knowledge (also termed communication networks in some studies). In information networks, linkages among members are based upon the exchange of information (Brass, 1984). Accordingly, centrality within this type of network reflects the degree to which the focal member is sought out by other team members for task or project-related information (Sparrowe et al., 2001).

Centrality as a mediator. The mediation argument draws directly upon social network theory, suggesting that boundary spanners are perceived as influential leaders and contributors by teammates because their boundary spanner behaviors help them acquire a central position within the team. In arguing for mediation several conceptual linkages must be established (Baron & Kenny, 1986). First, a direct relationship among boundary spanning behavior and individual outcomes needs to be justified. Supporting arguments for this direct linkage were presented above in my discussion of hypotheses 5a, 5b, and 5c. Second, rationale supporting that boundary spanning behavior positively relates to information network centrality must also be established. And finally, a positive relationship between information network centrality and individual outcomes needs to be established, thereby indirectly supplementing the notion that is *through* centrality as a mediator that boundary spanning behaviors relate to individual outcomes. As noted above, detailed rationale for the first linkage has already been provided in my

previous hypotheses. Next, I consider the relationships proposed in points two and three in more detail below.

First, a central crux of the mediation argument lies in the rationale supporting a positive relationship between engagement in boundary spanning behavior and information network centrality. An individual that is highly central within the team's internal information network is rated by others as a valuable source of information throughout the project. Given that external parties such as clients, advisors, and industry experts can provide the team with valued and relevant information to the project, it seems plausible that individuals connected to these key external sources will be seen internally as critical sources of information and knowledge. As their teammates consistently look to the boundary spanners to relay and disseminate information gained from the outside, the boundary spanners will become increasingly central within the team's information network.

Second, strong support for a positive relationship between network centrality and individual outcomes has already been established in previous research. The performance benefits associated with centrality are grounded in the arguments of classic social network theorists and have been empirically documented in a variety of studies (e.g., Baldwin, Bedell, & Johnson, 1997; Brass, 1984; Ibarra & Andrews, 1993; Sparrowe et al., 2001). These studies reveal positive relationships between network centrality and a variety of outcomes (e.g., power and influence, individual work performance, individual attitudes) across several organizational and team settings.

In conclusion, given these three arguments individually and in combination, it seems plausible that information network centrality provides an important mediating

mechanism that accounts for the positive effects stemming from boundary spanning behaviors.   Accordingly, I present the following hypotheses:

H6a: The relationship between individual boundary spanning and individual contributions to the team will be mediated by information network centrality.

H6b: The relationship between individual boundary spanning and internal leadership will be mediated by information network centrality.

H6c: The relationship between individual boundary spanning and member status and influence will be mediated by information network centrality.

Centrality as a moderator. The moderation argument provides an alternative explanation of the role of information network centrality in understanding the boundary spanning behavior-outcome relationship. Rather than emphasizing a mediating role of centrality, this moderation argument posits that the relationship between engagement in boundary spanning and the accompanying performance benefits will be strengthened by centrality. That is, the boundary spanning behavior-outcome relationship will be enhanced to the extent that the boundary spanner *also* occupies a highly central position within the team's internal network.

It is important to emphasize that the mediation and moderation hypotheses are comprised of different but not irreconcilable assertions (Baron & Kenny, 1986). In fact, both arguments posit that information network centrality plays a critical role in influencing the relationships between boundary spanning and individual outcomes. They differ, however, in their relative emphasis of the particular nature of the role of centrality; the mediation argument suggesting that it is *through* centrality that explains the benefits associated with boundary spanning and the moderation argument suggesting that

centrality serves to *strengthen* or enhance the positive boundary spanning-outcome linkage.

The crux of the moderation hypothesis is the assertion that a central internal network position allows the boundary spanner to differentially take advantage of their connections to external parties. Thus, the performance advantages of boundary spanning may exist not necessarily because boundary spanners *consistently* tend to occupy highly central positions in the team's internal information network (as the mediation argument suggests), but rather will occur with the *most strength* if boundary spanners are able to simultaneously occupy structurally advantageous positions within the team as well as remained tied to their team's external environment. This is so because the actions and behaviors of highly central individuals are more likely to quickly infiltrate the team and be recognized by other team members. Because highly central individuals have a large number of internal ties directed towards them, the other team members will more readily recognize their actions. Thus, boundary spanners who are also central within the team's internal information network will be better equipped to efficiently and effectively transfer the knowledge and information obtained from external sources to the team (see Hansen, 1999 for empirical support of the importance of network ties to transfer knowledge across and within units). Consequently, the perceptions of a boundary spanner's contributions to the team, leadership, and status and influence are likely to be stronger when those boundary spanners are also highly central within the team's network as compared to when they are not.

In conclusion, the moderation argument does not suggest that boundary spanning predicts information network centrality as the mediation argument suggests, but rather

focuses on the ability of boundary spanners to differentially maximize the utility of their external ties by also occupying central positions within the team. Support for the necessity of boundary spanners to simultaneously maintain internal network ties can be found in previous work studying organizational boundary spanners. Past studies distinguished effective boundary spanners from individuals displaying only strong internal connections or only strong external connections, confirming that in order to maximize the performance benefits associated with their role, boundary spanners must emerge as internal communications stars <u>with</u> strong external ties (Tushman & Katz, 1980; Tushman & Scanlan, 1981a; 1981b). Because effective boundary spanning activity is a two-step process (first, gathering information from the environment and second, transmitting that information back to the internal unit; Tushman & Katz, 1980; Tushman & Scanlan, 1981a; 1981b), boundary spanners must not only establish solid communication channels with external connections, but also remain strongly tied to the internal unit so that information can be effectively and quickly disseminated internally (Hansen, 1999; Tushman & Katz, 1980; Tushman & Scanlan, 1981a; 1981b).

Accordingly, I present the following set of hypotheses as an alternative to hypotheses 6a, 6b, and 6c:

Hypothesis 7a: The relationship between individual boundary spanning behavior and individual contributions to the team will be moderated by network centrality, such that this relationship will be stronger when the focal individual is highly central within the team's internal information network.

Hypothesis 7b: The relationship between individual boundary spanning behavior and member status and influence will be moderated by network centrality, such

that this relationship will be stronger the focal individual is highly central within

the team's internal information network.

Hypothesis 7c: The relationship between individual boundary spanning behavior

and individual contributions to the teams will be moderated by network centrality,

such that this relationship will be stronger when the focal individual is highly

central within the team's internal information network.

In summary, I provide a set of hypotheses regarding the potential antecedents and

consequences of individual boundary spanning behaviors. Additionally, the possible

mediating and moderating roles of information network centrality in the boundary

spanning-outcome relationship are also hypothesized. I conclude this chapter with a

summary of study hypotheses, presented in Table 1 on the following page. The following

chapter discusses the research methods incorporated in this study.

TABLE 1.

Summary of Study Hypotheses

H1: Self-monitoring will be positively related to individual boundary spanning behavior.

H2: Proactive personality will be positively related to individual boundary spanning behavior.

H3: Self-efficacy will be positively related to individual boundary spanning behavior.

H4: Instrumentality of the project will be positively related to individual boundary spanning behavior.

H5a: Individual boundary spanning behavior will be positively related to individual contributions to the team as perceived by their teammates.

H5b: Individual boundary spanning behavior will be positively related to internal leadership as perceived by their teammates.

H5c: Individual boundary spanning behavior will be positively related to member status and influence as perceived by their teammates.

H6a: The relationship between individual boundary spanning and individual contributions to the team will be mediated by information network centrality.

H6b: The relationship between individual boundary spanning and internal leadership will be mediated by information network centrality.

H6c: The relationship between individual boundary spanning and member status and influence will be mediated by information network centrality.

H7a: The relationship between individual boundary spanning and individual contributions to the team will be moderated by network centrality, such that this relationship will be strongest when the focal individual is highly central within the tam's internal information network.

H7b: The relationship between individual boundary spanning and internal leadership will be moderated by network centrality, such that this relationship will be strongest when the focal individual is highly central within the tam's internal information network.

H7c: The relationship between individual boundary spanning and member status and influence will be moderated by network centrality, such that this relationship will be strongest when the focal individual is highly central within the tam's internal information network.

Chapter 3: Research Methods

In this chapter, I present the data collection and analysis methods for my study. I first describe my sample, considering issues of experimental realism as well as the appropriateness of the sample for studying individual boundary spanning behaviors. Following this discussion, I then describe my data collection procedures, measures, and analytic procedures.

Sample

I collected data from a sample of 171 MBA students, comprising 27 consulting teams, at a large Mid-Atlantic university (team size averaged between 5-7 team members). As part of the university's MBA Program, all second year MBA students are required to participate in an intensive semester-long, actual consulting engagement. In exchange for a consulting fee, the consulting team is engaged to address a specific business need or problem of the organization. Final team recommendations are evaluated by the client and are implemented as deemed appropriate, thereby providing an <u>authentic</u> consulting experience for both the team and the participating organization.

Prior to the start of their fall semester, MBA students are individually assigned to a consulting team based upon their concentration areas and domains of experience. The MBA administrators strive to create teams in which members' interests and expertise complement one another as well as fit the needs of their client. Due to the diversity of student experiences and of client needs, teams are generally comprised of members with distributed expertise and diverse demographic composition, and team members are often required to draw upon this diversity in order to effectively service their clients.

Experimental realism. As already noted, the teams are authentic consulting teams engaged in a real project. While comprised of full-time MBA students, the team experience is analogous to that of full-time professional consultants in a variety of ways. First, as noted above, teams consist of individuals with varying backgrounds, skills, and experiences, which is not unlike the composition of full-time professional teams found at consulting organizations. This breadth of expertise and diversity in knowledge provide team members with the "raw material" needed for comprehensive decision-making and innovative problem solving (Simons et al., 1999).

Secondly, these consulting teams operate within a dynamic and changing business environment akin to that of full-time professional consultants. Teams face tight time pressure and aggressive deadlines, including requirements for midpoint and final deliverables to their clients. Additionally, as is the norm within the consulting profession, these teams often face ambiguous client expectations and changing project scope requirements. As such, the team members must proactively and effectively manage these environmental obstacles, predict client demands, and manage changing client expectations. For instance, teams are required to coordinate an initial planning meeting (or meetings) with their clients and draft an engagement letter outlining the scope and expectations for the ensuing project. Not unlike other professional consulting teams, this engagement letter serves as a formal contract between the team and the client regarding future services to be rendered.

Additionally, similar to consulting teams within professional services organizations, these teams are primarily self-managing but do have support and resources from higher-level managers and supervisors. For the current teams of interest, a faculty

advisor serves as a source of information, advice, and guidance throughout the project, while offering limited oversight and direction over each team.

Lastly, clients acknowledge the experience and professionalism of the consulting team members, looking to the team to provide assistance and solutions for real and pertinent business issues. Clients consist of local and regional organizations, including several Fortune 500 firms, and project engagements range across marketing, information technology, strategic management, finance, and general management domains. Examples of previous engagements include developing a marketing plan, advising an information technology implementation, and creating a financial analysis benchmarking tool. Each team is responsible for presenting a set of deliverables to the client that incorporates their recommendations and solutions. The consulting team's recommendations are then evaluated by the client and implemented as appropriate.   These conditions not only provide for a challenging group project, but also create a real consulting experience for the team members as well as for their clients.

Appropriateness of research setting. In addition to emphasizing experimental realism, it is equally important to underscore the appropriateness of this research setting for exploring individual boundary spanning. In her earlier work, Ancona (1990) noted that boundary spanning was particularly relevant as well as beneficial in *externally dependent* teams that were highly reliant on sources outside of the team to carry out their work. The current sample of consulting teams are externally dependent in that they must manage client needs and demands as well as satisfy the expectations of faculty advisors and fulfill MBA program requirements. As such, variation in the extent to which these teams can actively establish successful external relationships, anticipate and respond to

31

changing external conditions, and acquire necessary resources from outside of the team are likely to play critical roles throughout the project.

In order to better understand and assess the appropriateness of the task and team environment for testing my hypotheses, I conducted 21 interviews of previous team members who participated in the MBA consulting program during the Fall 2003 semester. Specifically, I interviewed 2-3 team members of 8 teams and inquired as to the formation of team member roles, nature of relationships with clients and faculty, and other external activities carried out by team members. The interviews were semi-structured, allowing me to ask additional questions as needed to probe further or to clarify an interviewee's comments. The protocol utilized during these interviews is provided in Appendix 1 and the following paragraphs reflect some of the information obtained from these interviews.

Interestingly, formal as well as informal boundary spanning roles are established or are emergent to meet the varying performance challenges faced by these externally dependent teams. Formalized boundary spanning roles include a *faculty liaison*, who is responsible for managing the external relationship with the team's faculty advisor, and a *client liaison*, who is responsible for managing the external relationship with the primary client contact. The decision to institutionalize these team member roles was made by the MBA Program Office in an effort to minimize potential redundancies and inefficiencies through the use of an initial single point of contact between the teams and the MBA Program Office itself.

Through my interviews, I noted that the actual enactment of these formal boundary spanning roles is at the discretion of each individual team. As such, there is

variation across and within teams in the degree to which team members share these roles, develop additional formal or informal roles to manage their external environment, or engage in specific role behaviors and actions. During the interviews, team members spoke of instances in which multiple individuals shared formal liaison roles during the project, noting that more than one team member took on responsibility for establishing and maintaining critical relationships with external members at the client organization or with faculty advisors at the University.   Interestingly, client liaison roles were less frequently shared across team members as compared to faculty liaison or other informally emerging boundary spanning roles.

Data Collection Procedures

I relied primarily on a survey method approach to investigate my research questions. Surveys were administered to all team members at three different points in time. At approximately 4 weeks into the projects, Survey 1 was administered during a Program-wide information meeting and was utilized assess personality and motivational variables. At approximately 12 weeks into the projects, Survey 2 was administered to each team during a regularly scheduled team meeting for the purpose of gathering data on boundary spanning behaviors and information network ties. Finally, at the completion of the projects, marked by final deliverable presentations to clients, Survey 3 was emailed to each participant and was used to collect individual leadership and contribution ratings.

Human subjects approval was granted by the University prior to administering surveys to the team members. In exchange for providing developmental feedback reports to each team at the conclusion of their projects, the MBA Consulting Program Office

made participation in the three-part survey process described above mandatory.   In

accordance with IRB guidelines, participation in this dissertation study was voluntary and

a signed informed consent form from each participant was needed to authorize the use of

their data in this research. Only 3 individuals elected not to sign the informed consent

forms and were subsequently removed from the data set, yielding a usable sample of 168

team members. In order to minimize potential social desirability biases and to encourage

honest responses, participants were also informed that their responses would not be seen

by their faculty advisors or clients and would not in anyway impact faculty advisor

evaluations of individual or team performance.

Please refer to Figure 2 on the next page for a summary of all measured variables

organized according to source and time measured.

FIGURE 2.

Summary of Measurement of Primary Study Variables

Individual Differences:
- Self-monitoring
- Proactive Personality

Motivational Factors
- Self-efficacy
- Project Instrumentality

Time 1 (S)

Individual Boundary Spanning Behavior

Time 2 (O)

Individual Outcomes
- Contributions to the team
- Internal leadership
- Status and influence

Time 3 (O)

Information Network Centrality
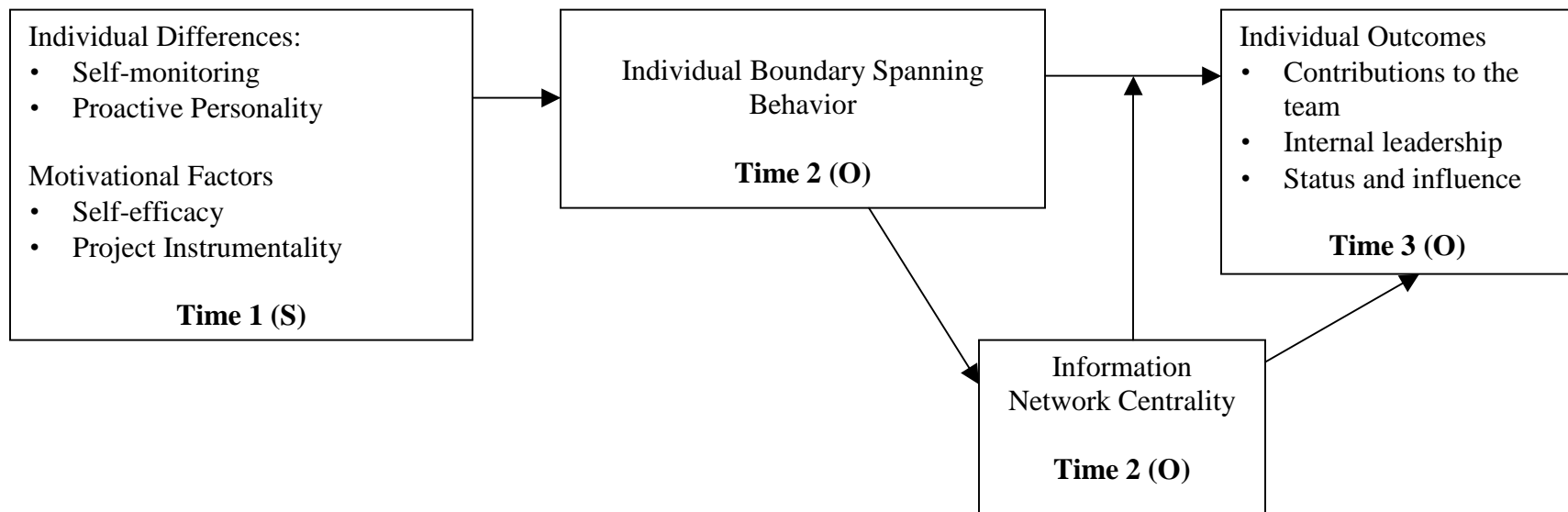
Time 2 (O)

LEGEND

Time 1 (late September, ~ 4 weeks)	**S = self-rated**
Time 2 (late November, ~ 12 weeks)	**O = other rated**
Time 3 (January, after project completion)	

Measures

Whenever possible, established scales were utilized to measure constructs of interest. Unless otherwise noted, measures were in the form of a five-point likert-type scale (1=strongly disagree; 2= somewhat disagree; 3 = neither disagree or agree; 4=somewhat agree; 5=strongly agree). Cronbach's alpha was calculated for all measures to demonstrate acceptable levels of inter-item consistency. Additionally, where appropriate to justify aggregation of measures across raters, r_{wg}, ICC(1), and ICC(2) calculations were performed to show adequate levels of agreement across raters, inter - rater reliability, and reliability of the average rating across raters, respectively (James, Demaree, & Wolf, 1984; Shrout & Fleiss, 1979). These descriptive statistics are presented in Table 3 on page 49. Measures of study variables are listed in Appendix 2.

Self-monitoring. Self-monitoring was measured with the 13-item Revised Self-Monitoring Scale (Lennox & Wolfe, 1984). This revised scale measures self-monitoring as a continuous variable and was developed as an alternative to Snyder and Gangestad's (1968) original 10-item true-false questionnaire. Previous research has demonstrated acceptable scale reliability for this revised measure. Sample items included: "I have found that I can adjust my behavior to meet the requirements of any situation I find myself in"; "In social situations, I have the ability to alter my behavior if I feel that something else is called for"; "I can usually tell when I've done something in appropriate by reading the listener's eyes." Reliability analyses for this study revealed that two negatively worded items were diminishing the overall alpha of the scale. Accordingly, these two items were dropped, resulting in an 11-item scale (Cronbach's alpha = .83, suggesting acceptable inter-item reliability).

Proactive personality. Proactive personality was assessed with the shortened 10-item created and previously utilized by Siebert et al. (1999). This scale was based upon the original 17-item Proactive Personality Scale (PPS) (Bateman and Crant, 1993). Previous research has demonstrated acceptable scale reliability for the shortened 10-item measure. Sample items included: "If I don't see something I like, I fix it"; "I excel at identifying opportunities"; "Wherever I have been, I have been a powerful force for constructive change." Cronbach's alpha equaled .80, suggesting acceptable inter-item reliability.

Self-efficacy. Self-efficacy was assessed via an 8-item scale developed for this study. This scale measured the team members' confidence in their ability to successfully carry out a variety of boundary spanning behaviors. Several items included within this scale were adapted and modified from Parker's (1998) role breadth self-efficacy scale, which asks respondents to rate how confident they feel engaging in a variety of tasks involving proactive, interpersonal, and integrative competencies, including their confidence in contacting individuals outside of the work unit. Items began with the stem "Based upon my past experiences working in teams, in my MBA consulting team, I feel very confident…" Sample items were as follows: "…establishing a good rapport with key external stakeholders external to the team"; "…being an advocate for my team to important external contacts, if necessary"; "…maintaining external relationships that might be helpful to my team." The resulting 8-item scale yielded a Cronbach's alpha equal to .92, suggesting acceptable inter-item reliability. Additionally, as anticipated, exploratory factor analyses (principle components with varimax rotation) suggested that all 8 items loaded on a single factor.

Instrumentality of the project. A 6-item scale was developed for this study to assess the extent to which respondents anticipated that their team project would lead to valued outcomes. Sample items were as follows: "This project will provide a promising avenue for career networking / recruiting"; "I see this project as a valuable opportunity to gain necessary professional expertise ad knowledge"; "This project will help me obtain useful leadership experience." Cronbach's alpha was equal to .88, suggesting acceptable inter-item reliability. Additionally, as expected, exploratory factor analyses (principle components with varimax rotation) suggested that all 6 items loaded on a single-factor.

Individual boundary spanning behavior. The extent of an individual's engagement in boundary spanning behaviors was captured through a 16-item scale developed for the purposes of this study (ratings were provided in the form of 1= not at all, 2= to a little extent, 3= to some extent, 4= to a great extent, 5= to a very great extent). This 16-item scale was based in part upon Ancona and Caldwell's (1992) study in which a variety of boundary spanning behaviors were assessed within 45 new product development teams. While this earlier study ultimately aggregated across individual behavior to capture team boundary management, their original 24-item scale serves as an appropriate starting point for assessing individual boundary spanning within externally dependent teams. Accordingly, I adopted several of Ancona and Caldwell's original items and modified them to reflect the current consulting team context (e.g., special attention was given to the facts that the consulting teams in my sample were not part of a larger organization and that they more often span boundaries to interact with their clients, faculty advisors, and other business professionals than with other consulting teams).

Following previous boundary spanning studies (e.g., Ancona & Caldwell, 1992), I sought to capture three primary types of boundary spanning behavior: 1) scouting and scanning for pertinent information, 2) representing and buffering the team, and 3) coordinating task-related activities. Additionally, to reflect the current team context, special attention was given to the target of these boundary spanning behaviors. Several scale items explicitly referenced faculty advisors or clients in order to highlight the particular target to which the boundary spanner was addressing. Other scale items incorporated a more general term "outsiders," which was defined in the survey instructions as follows: "The term 'outsiders' in the items below means parties outside of your consulting team (e.g., faculty advisors, clients, other faculty, business professional, other MBA teams, etc. with whom your team has some sort of contact with you on this project)."

The measure was in the format of a matrix, which listed the names of their team members along the top the matrix and the 16 scale items down the left-hand column of the matrix (please refer to Appendix 2). Through the use of this format, respondents were asked to provide ratings of the extent to which each of their teammates engaged in the various boundary spanning behaviors. Peers were specifically selected as the most appropriate source to rate one another's boundary spanning behaviors because team members work together on a frequent, often daily, basis and thus have ample opportunity to witness and evaluate behavior. In addition, it is plausible that individuals might adjust their behaviors in the presence of faculty advisors and / or clients for self-serving or impression management purposes, perhaps making a conscious effort to appear more proactive in establishing and managing external relationships. As such, peer ratings were

deemed most appropriate for assessing individual boundary spanning behavior. Respondents were instructed to not provide ratings for themselves. Individual boundary spanning behavior was thus assessed as the mean rating across all team member ratings of the target individual. r_{wg}, ICC(1), and ICC(2) values are presented in Table 3 and are at acceptable levels to justify aggregation across peer ratings in order to capture a mean individual boundary spanning behavior score.

Exploratory factor analyses (utilizing principle components with varimax rotation) supported a 3-factor solution with a total of 13 items (3 items were dropped due to substantial cross-loadings). Interestingly, the factor analysis results suggested that both the nature of the behavior (e.g., scouting for information versus representing the team) and the target of the behavior (e.g., clients versus faculty advisors) were important to the dimensionality of individual boundary spanning behavior. The 3-factor solution comprised of the following factors: 1) *representation and task coordination to clients*, also referred to as boundary spanning to clients, 2) *representation to advisors,* also referred to as boundary spanning to advisors, and 3) *scouting and scanning behaviors.* The factor structure is presented in Table 2 on the following page. Cronbach's alpha results for all factors suggest acceptable inter-item reliability.

TABLE 2.

Exploratory Factor Analysis Results for Boundary Spanning Scale Items

Items	Factors		
	1	**2**	**3**
To what extent does this team member…			
…keep the client informed of your group's activities?	**.855**		
…coordinate activities with other groups/ people in the client organization as needed tot complete your team project?	**.855**		
…build relationships with your client to better manage their expectations and understand their needs?	**.846**		
…procure things which the team needs from other groups or individuals in the client organization?	**.827**		
…prevent outsiders from "overloading" the team with too many requests?	**.646**	.338	
…persuade outsiders (e.g., faculty, clients) to support team decisions?	**.643**	.405	.405
…work to develop strong relationships with outsiders that are important to your project (e.g., client contacts, advisors, others)? [a]	.599	.515	.345
…review team ideas / solutions with outsiders? [a]	.528	.449	.300
…collect information from outsiders that benefit your project?		**.886**	
…reach out to individuals outside of your team that can provide project-related expertise or ideas?		**.804**	.350
…acquire resources / access (e.g., access to information, access to clients) for the team?		**.727**	
…"talk up" / promote the team to outsiders? [a]	.484	.577	
…find out how other MBA groups are progressing on similar projects?		**.546**	
…proactively seek the advice of your faculty advisor?			**.879**
…keep your advisor updated on your team's progress?		.333	**.878**
…build relationships with your advisor to better manage his/her expectations for your project?		.332	**.845**

Notes.

[a] Items were dropped due to substantial cross-loading.

Loadings of less than .30 are not listed.

Individual Outcomes. Three aspects of individual outcomes (member contributions, internal leadership, and influence on the project) were assessed through peer ratings of the target individual. I utilized a matrix similar to the one described above (shown in Appendix 2). Using this matrix format, respondents were asked to rate each of their teammates on the three dimensions of individual outcomes. All items included the following stem: "To what extent did this team member…" and responses were provided in the form of 1= not at all, 2= to a little extent, 3= to some extent, 4= to a great extent, 5= to a very great extent. The first dimension, *member contributions*, was assessed with 4 items developed for this study. Sample items were as follows: "…provide high quality contributions to the project?"; "…contribute original ideas that have benefited the project?" The second dimension, *internal leadership* was measured using 2 items adapted from Taggar, Hackett, and Saha's (1999) leadership emergence scale. The two items were as follows: "…assume a leadership role on your team?" and "…exemplify effective leadership skills during your project?". Finally, *influence* was measured with 3 items developed for this study. Sample items were as follows: "…substantially influence the direction of this project?" and "…influence important decisions for your team on this project?"

Exploratory factor analyses (utilizing principle components analysis with varimax rotation) did not support the intended 3-factor structure and revealed that all 9 items loaded strongly on one factor. Given these factor analysis results and the substantial inter-correlations among the 3 aspects of individual outcomes (correlations <= .90), I created an overall leadership and contributions scale consisting of the 9 items.

Cronbach's alpha for this scale was .91, suggesting acceptable inter-item reliability. r_{wg}, ICC(1), and ICC(2) values are presented in Table 3 and are at acceptable levels to justify aggregation across peer ratings in order to capture a mean individual leadership and contributions score.

Network centrality. Following previous network studies, I captured in-degree centrality as the sum of the values of the information ties directed towards the focal individual, indicating the degree to which that target individual was identified as a source of project-related information for other team members. While a variety of methods exist to measure network centrality, the in-degree centrality measure is based upon other team member's ratings of the focal individual and thus, is not subject to self-report or same-source biases (Sparrowe et al., 2001).   Again utilizing the matrix format described above, each respondent was asked to report the extent of his or her ties to all other teammates. Consistent with previous research (e.g., Morrison, 2002), information network ties were assessed with a 1-item measure ("To what extent is this person a valuable source of information to you on this project?")[1]. Responses were provided in the form of 1= not at all, 2= to a little extent, 3= to some extent, 4= to a great extent, 5= to a very great extent.

Control variables. Four broad categories of control variables were considered in this dissertation. They include demographic variables, relational demography (via two alternative approaches), functional experience, and general leadership, and are discussed in detail below.

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[1] It is important to note that there are multiple ways to operationalize information network centrality. The current study utilizes only one such measure (the sum of ratings directed towards the focal individual). As such, this measure does not take into account the *relative* centrality of the focal individual versus his / her other team members, but rather captures team member perceptions of the focal individual's ability to provide useful information.

Demographic variables. While not of primary theoretical interest in this study, following previous research exploring relationships among demographic attributes and employee attitudes and behaviors (see Tsui, Egan, & O'Reilly, 1992), several demographic variables were assessed in an effort to diminish extraneous "noise" in measurement and eliminate potential alternative explanations for study results. The following demographic variables were measured: gender (coded as 1= female; 0 = male), age (continuous as of the start of the project), citizenship (coded 1= domestic; 0= international), race (coded as two dummy variables: 1= white, 0= other; 1= Asian, 0= other), and GMAT score (continuous score as a proxy for ability). These demographic variables were considered as they might explain other sources of non-random variation in boundary spanning behaviors and/or individual outcomes.

Relational demography. Additionally, following previous research studying the effects of demographic diversity, relational demography scores were also assessed in order to capture the extent to which individuals are different from their teammates on the demographic characteristics. Conceptually, it is important to consider relational demography scores because 1) it is possible that individuals may be more or less likely to engage in key behaviors such as a boundary spanning if they are noticeably similar or different from their teammates and 2) since behavioral and outcome measures are based upon peer ratings, it is also possible that those peer ratings will be biased (positively or negatively) based on perceptions demographic similarity or difference. Following previous research there are several methods for capturing relational demography. Two of the most widely accepted methods - Euclidian distance (i.e., difference scores) and the interaction approach (Riordian, 2000) - were used in this study and are discussed below.

First, in accordance with Tsui et al. (1992), four relational demographic measures were computed based upon the simple demographic variables for race, age, gender, and citizenship. The relational scores were based upon Euclidian distance scores, specifically the difference between an individual and all other teammates on the particular demographic characteristic. The specific formula is as follows:

$$\left[\sum_{j=1}^{n} \frac{(S_i - S_j)^2}{n} \right]^{1/2}$$

where S_i = the respondent's own score on the dimension being examined, S_j = each of the other consulting team members' scores on the dimension being examined, and n = the number of team members on the consulting team. A relational score was derived for each of the four demographic variables noted above. Differences in the continuous variable age were based in years and differences in categorical variables (race, gender, and citizenship) were measured on a zero to one scale. For a detailed description of the computations involving continuous versus categorical variables, I refer the reader to Tsui et al. (1992).

Second, in accordance with Riordan and Shore (1997) and in consideration of recent criticisms of difference score approaches, the interaction approach was also utilized as an alternative method for assessing relational demography. In this approach, the individual's score on a particular demographic attribute is multiplied by the team's compositional score on that same attribute to create an interaction term (individual demographic score X team demographic composition score). Thus, this approach determines an individual's score relative to the collective unit that he or she operates within. In this dissertation, five interaction terms were created. The specific individual

demographic scores and team demographic composition scores are discussed in turn below.

The demographic characteristics included gender, age, citizenship, white, and Asian and were measured as described above: gender (coded as 1= female; 0 = male), age (continuous as of the start of the project), citizenship (coded 1= domestic; 0= international), white (coded as 1= white, 0= other), Asian (1= Asian, 0= other). The five team composition variables were created based upon demographic composition of each of the 27 teams in my current sample. These five variables were categorized as follows: gender (coded as 1= mostly female, 2= 50/50 female and male, or 3= mostly male), age (continuous variable of the average age of the group), citizenship (coded as 1= mostly domestic, 2= 50/50 domestic and foreign, or 3= mostly foreign), white (coded as 1= mostly white, 2= 50/50 white and non-white, 3= mostly non-white), Asian (coded as 1= mostly Asian, 2= 50/50 Asian and non-Asian, 3= mostly non-Asian). Note, consistent with Riordan and Shore (1997), teams were classified with a 1 on a particular attribute if more than 60% of the team possessed that attribute, a 2 if between 40% and 60% of the team possessed the attribute, and a 3 if less than 40% of the team possessed the attribute. Interaction terms were created as the byproduct of the individual demographic score and team composition demographic score for each of the five attributes of interest.

Functional experience. In addition to demography, 5 categories of functional experience encompassing marketing, finance, management and organization (M&O), information technology, and logistics were assessed via self-reports (coded as four dummy variables: 1= marketing, 0= other; 1= finance, 0= other; 1=M&O, 0= other; 1= information technology, 0= other). Functional experience was provided by each

participant prior to the start of the project and utilized by the MBA Consulting Program office to assist in the assignment of individuals to teams. I considered functional experience an important control variable in light of recent research suggesting the importance of functional background on a variety of behaviors within the team, such as involvement in team decision-making and navigation towards central network positions (Bunderson, 2003). Accordingly, functional expertise may impact engagement in boundary spanning behaviors and even one's leadership and performance within teams. Furthermore, I also captured whether or not there was a match of the individual's functional experience with their project domain (coded as 1=yes, 0= no), anticipating that a match might facilitate boundary spanning and/or performance in the team. The functional domains of the projects were determined by the administrators of the MBA Consulting Program Office prior to the start of the semester and were based upon formal and informal conversations with clients regarding the project domain (project domains were comprised of the same 5 functional domain categories noted above).

General leadership. Finally, to address a potential alternative explanation for the linkages among antecedents and boundary spanning behaviors or behaviors on outcomes, I also strived to capture a "general leadership" score for each team member. Statistically controlling for a participant's general leadership skills and abilities provides a conservative test to eliminate the possibility that it is actually leadership (irrespective of my hypothesized antecedents) that predicts peer ratings of the target's engagement in boundary spanning behavior as well as peer ratings of individual outcomes. For example, assessing and controlling for general leadership eliminates the concern that a significant relationship between boundary spanning and peer ratings of leadership is not actually due

engagement in boundary spanning, but rather is due to the fact that the individual generally possesses leadership qualities when working in team settings.

To capture such a generalized leadership assessment, I utilized leadership scores that were previously collected throughout three separate team experiences (all occurring during the study participants' first year in their MBA program). During these three team experiences – a business simulation team competition, a consulting team project requirement as a part of an organizational behavior course, and a business ethics team project – team members were asked to rate each of their teammates on their leadership qualities. A 5-item scale was utilized and responses were provided in the format of 1=strongly disagree to 7=strongly disagree. Sample items included: "He/she effectively motivates and guides other towards accomplishing challenging goals and objectives"; "He/she empowers others to make decisions and to handle situations on their own"; "He/she demonstrates initiative in situations that require leadership." r_{wg}, ICC(1), and ICC(2) values are presented in Table 1 and are at acceptable levels to justify aggregation across peer ratings in order to capture a mean leadership score for each target. Significant intercorrelations among the three team experiences supports averaging across the different scenarios to form a overall composite score of general leadership (bivariate correlations were as follows: .28, $p < .01$ (business simulation team competition, business ethics team project); .23, $p < .01$ (business simulation team competition, consulting team project in an organizational behavior course); .21, $p < .01$ (business ethics team project, consulting team project in an organizational behavior course). Finally, Cronbach's alpha of the overall scale equaled .87, suggesting acceptable inter-item reliability.

TABLE 3.

Descriptive Statistics, Scale Reliabilities, r_{wg}s, and ICCs for Study Variables[a]

	N	M	SD	Number of Items	α	r_{wg}	ICC(1)	ICC(2)
1. Age	167	29.02	3.34	1	--	--	--	--
2. Asian	155	.28	.45	1	--	--	--	--
3. GMAT	166	655.54	54.82	1	--	--	--	--
4. M&O Expertise	160	.16	.36	1	--	--	--	--
5. Marketing Expertise	167	.27	.45	1	--	--	--	--
6. Relational Race	168	.54	.26	1	--	--	--	--
7. General Leadership [b]	164	5.98	.50	5	.87	.97	.34	.68
8. Self-monitoring	168	3.88	.49	13	.83	--	--	--
9. Proactive Personality	168	3.99	.48	10	.80	--	--	--
10. Boundary Spanning Self-efficacy	168	4.10	.66	8	.92	--	--	--
11. Project Instrumentality	168	3.21	.88	6	.88	--	--	--
12. BS 1: To Clients	168	2.73	.75	6	.91	.81	.31	.74
13. BS 2: To Advisors	168	2.82	.93	3	.95	.68	.36	.78
14. BS: 3 Scouting / Scanning	168	3.26	.72	4	.84	.71	.23	.66
15. Information Network Centrality	168	4.01	.66	1	--	--	--	--
16. Individual Leadership & Contributions	167	3.60	.64	9	.97	.94	.34	.77

Notes.

[a] only those control variables utilized in hypothesis testing are presented. Decision criteria for final selection of control variables is discussed in the following chapter, Chapter 4: Results.

[b] represents overall statistics averaged across three separate leadership assessments. Individual statistics were as follows: business simulation team competition (α =.91, r_{wg} =.98, ICC1 =.41, ICC2 =.74); consulting team project in an organizational behavior course (α =.89, r_{wg} =.97, ICC1 =.31, ICC2 =.64); business ethics team project (α =.83, r_{wg} =.94, ICC1 =.31, ICC2 =.65).

Analytical Procedures

Due to the nested nature of my data set (i.e., individuals nested within consulting teams), when warranted, I utilized hierarchical linear modeling (HLM) to investigate several of my hypotheses. I first discuss of the nature, advantages, and appropriateness of HLM and then discuss additional analytical procedures utilized in this dissertation.

HLM is a statistical technique originally developed within educational research domains (Lee & Bryk, 1989; Raudenbush & Bryk, 2002), which allows researchers to examine relationships across multiple levels of analysis. HLM can be utilized to test 1) relationships between individual-level and group-level predictors on individual-level dependent variables and 2) examine the existence of cross-level moderators (e.g., a group-level moderator on the relationship between two individual-level variables). Taking into account non-independence inherent within nested data sets, HLM adopts a two-level approach (Level 1 and Level 2 analyses) to simultaneously model within-group and between-group variance (Raudenbush & Bryk, 2002). Thus, while this dissertation focused only at the individual level of analysis, HLM still proved a valuable tool to account for my nested data set and to appropriately partition sources of within-group and between-group variance in tests of certain hypotheses.

HLM has several primary advantages over ordinary least squares (OLS) regression. First, unlike OLS regression, HLM does not assume homogeneity in regression slopes. While ordinary regression assumes that relationships between independent and dependent variables remain constant, HLM recognizes that these relationships can and do often vary across groups (Raudenbush & Bryk, 2002). Consequently, HLM Level 1 analyses regress independent variables on the dependent

variable for each group separately. Intercept and slope terms for the set of regression equations can then be tested to determine if significant variance in these terms exists across groups. If significant between-group variance is indeed present, HLM provides researchers with the ability to model this variance and examine potential predictors of between-group variance during Level 2 analyses. In contrast, in ordinary least squares regression, this between-group variance is treated as random noise and is essentially ignored.

Secondly, unlike OLS regression, HLM does not assume independent error terms. HLM allows for dependence among observations, recognizing that as a result of shared group experiences individuals are likely to have more similarities with one another than to individuals outside their group. Consequently, although OLS regression assumes independent error terms, when individuals are nested within groups there will be a group-level component within the error term causing non-independence. HLM handles through this through the use of a complex error term, incorporating both individual-level and group-level sources of errors (Raudenbush & Bryk, 2002).

Consequently, as noted above, given that my dissertation sample involved individuals nested within teams, HLM was a useful tool in partitioning between-group versus within-group variance where appropriate. An important first step in determining the necessity of utilizing HLM was to run the *null model,* which reports the proportion of within-group and between-group variance in the dependent variables of interest. The resulting ICC(1), which values reflect the percent of variance residing between groups, were utilized to determine if HLM analyses were appropriate (simply, if little or no

variance in the dependent variable resides between groups, there is no need for HLM

analyses since the assumptions of OLS regression techniques are not violated).

As discussed in more detail in the subsequent chapter, the results of the null

models indicated that my tests of hypotheses 1-4 (antecedents to boundary spanning

behavior) required HLM techniques while the tests of hypotheses 5-7 (consequences of

boundary spanning behavior) did not. Consequently, I utilized HLM in the testing for

antecedents of boundary spanning behavior and OLS and social network techniques in

my testing for the relationship between boundary spanning and individual outcomes. The

results of the null models and all other tests of my hypotheses are presented in the

following chapter.

In summary, primary analyses were conducted utilizing one or several of the

following: HLM, regression, and network analysis. Preliminary analyses included

descriptive statistics, zero-order correlations, exploratory and confirmatory factor

analyses, and scale reliability analyses.

Chapter 4: Results

This chapter outlines the results of my data analyses. I begin with a discussion of preliminary analyses and descriptive statistics. I then present the results of the tests of each hypothesis and I conclude with a brief summary of those results.

Preliminary Analyses

Identification of Significant Control Variables

Considering potential power issues given a relatively small sample of 171 participants, special care was taken to appropriately select control variables to be included in my final tests of hypotheses. I first ran preliminary OLS regression analyses to identify the significant control variables that would then be included in subsequent tests. As discussed in Chapter 3, Research Methods, two alternative methods were utilized to capture relational demography: a difference score approach and an interaction approach. As such, for each dependent variable of interest (boundary spanning to clients, boundary spanning to advisors, scouting / scanning behaviors, and individual leadership and contributions), two sets of regression equations were run with all control variables included as predictors. The first test, presented in Table 4a below, incorporated the relational difference scores and the second, presented in Table 4b below, included the interaction terms of individual demographic scores times team composition demographic scores.

Results of Regression Analyses for Preliminary Tests of Control Variables: Difference

Score Approach

	BS 1: To Clients		BS 2: To Advisors		BS 3: Scouting / Scanning		Leadership / Contribution	
	ß	t	ß	t	ß	t	ß	t
Step 1								
White	-.14	-.93	-.02	-.10	.09	.63	.09	.63
Asian [a]	-.30	-2.00*	-.05	-.34	-.09	-3.58	.13	-.87
Age [a]	.11	1.24	.15	1.70	.19	2.29*	.08	1.03
Gender (female)	.01	.07	-.08	-.94	-.12	-1.37	-.10	-1.15
Citizenship (US)	-.02	-.17	-.00	-.02	.04	.39	.03	.34
GMAT [a]	-.10	-1.05	-.17	-1.78	-.16	-1.67	-.04	-.46
General Leadership [b]	.08	.89	.13	1.48	.11	1.26	.30	3.45**
Marketing [a]	.31	1.47	.42	2.01*	.13	.65	.12	.60
Finance	.15	.72	.32	1.54	.08	.38	.11	.56
M&O [a]	.02	.10	.30	1.79	.21	1.26	.10	.60
IT	.23	.23	.22	1.22	.16	.92	.13	.77
Match with Project	.05	.53	.15	1.65	.14	1.69	.06	.73
Step 2								
Relational Age	.07	.85	.02	.24	-.01	-.08	.16	1.90
Relational Citizenship	.09	1.00	.17	1.73	.14	1.45	-.03	-.31
Relational Race [a]	-.15	-1.41	-.28	-2.61**	-.19	-1.73	-.02	-.19
Relational Gender	-.24	-2.57	-.08	-.85	.01	.12	-.08	-.84
R^2	.26		.28		.28		.41	
ΔR^2	.04		.05		.05		.16***	
Model F	2.17**		2.42**		2.35**		4.49***	

Notes. (continued on following page)

TABLE 4A.

Results of Regression Analyses for Preliminary Tests of Control Variables: Difference

Score Approach

N = 145. * p < .05. ** p < .01. *** p < .001. All significance levels are based on two-tailed tests.

[a] included in final tests of hypotheses 1-4.

[b] included in final tests of hypotheses 5-7.

Results of Regression Analyses for Preliminary Tests of Control Variables: Interaction

Approach

	BS 1: Boundary Spanning to Clients		BS 2: Boundary Spanning to Advisors		BS 3: Scouting / Scanning		Leadership / Contribution	
	ß	t	ß	t	ß	t	ß	t
Step 1								
White	-.13	-.93	-.01	-.10	.01	.08	.10	.65
Asian [a]	-.37	-2.00*	-.08	-.57	-.12	-.77	-.15	-.99
Age [a]	.09	1.24	.05	.57	.12	1.38	.08	.86
Gender (female)	.07	.07	-.09	-1.05	-.14	-1.59	-.06	-.70
Citizenship (US)	.16	-.17	.08	.84	.08	.81	.06	.60
GMAT [a]	-.08	-1.05	-.18	-1.98*	-.18	-1.91	-.04	-.43
General Leadership [b]	.09	.89	.14	1.69	.11	1.30	.31	3.61***
Marketing [a]	.41	2.07*	.34	1.69	.04	.18	.12	.56
Finance	.14	.71	.28	1.42	.01	.02	.05	.23
M&O [a]	.16	1.01	.33	2.02*	.19	1.12	.12	.69
IT	.23	1.36	.16	.95	.10	.54	.07	.39
Match with Project	.01	.12	.12	1.45	.15	1.80	.06	.75
Age Comp.	.09	1.05	.34	3.91	.21	2.29*	.02	.27
Citizenship Comp.	.43	3.98***	.27	2.51	.20	1.77	.06	.54
Race Comp. (white)	.04	.34	.00	.01	-.20	-1.67	.10	.81
Race Comp. (Asian)	.01	.13	.13	1.13	.08	.66	.04	.37
Gender Comp.	.20	2.23*	.07	.72	.07	.68	.18	1.88
Step 3								
Age Interaction	-.94	-1.12	.24	.29	-.17	-.49	-.77	-2.13*
Citizenship Interact.	.03	.23	-.08	-.62	.09	.62	-.14	-1.05

TABLE 4B.

Results of Regression Analyses for Preliminary Tests of Control Variables: Interaction

Approach

Race (white) Interact.	.11	.48	.26	1.12	.27	1.12	.24	.99
Race (Asian) Interact.	-.21	-.54	-.89	-2.26*	-.50	-1.20	-.07	-.18
Gender Interaction	-.48	-1.39	-.26	-.74	-.49	.63	-.1.61	-1.89
R^2		.26		.28		.28		.41
ΔR^2		.04		.05		.05		.16***
Model F		2.17**		2.42**		2.35**		4.49***

Notes.

N = 145. * $p < .05$. ** $p < .01$. *** $p < .001$.

All significance levels are based on two-tailed tests.

[a] included in final tests of hypotheses 1-4.

[b] included in final tests of hypotheses 5-7.

In all regression equations, the simple demographic characteristics were included in step 1, followed by either the relational difference scores or interaction terms (depending upon the particular method selected) in step 2, and finally followed by the appropriate hypothesized predictors (depending upon the specific dependent variable selected) in step 3 (not show in the tables for simplicity). The results of these two sets of regressions were then compared and decisions were made based on significance levels as to whether or not it was appropriate to include the control variable in my final tests of hypotheses. My decision criteria for inclusion of control variables in subsequent tests are described below.

For simple demographic variables, functional experience, and general leadership scores, variables that were significant in <u>one</u> regression equation were carried forward to future analyses. That is, in order to be conservative, any variable that showed a significant relationship with the dependent variable of interest in either the regression equation utilizing the difference score approach *or* in the regression equation utilizing the interaction approach was retained. Furthermore, with specific respect to the tests of antecedents to boundary spanning behaviors (hypotheses 1-4), any variable that was retained when predicting one of the three types of boundary spanning behaviors was included in all subsequent tests involving all three types of boundary spanning. This again was in order to be conservative, as well as consistent, in my tests of hypotheses 1-4.

For relational demography scores, the two alternative approaches were compared and variables that were significant for <u>both</u> regression equations were carried forward to future analyses. That is, for any given demographic attribute, only if the difference score *and* the respective interaction term both yielded significant results, would that particular

control variable be retained. Because the difference scores and interaction terms were conceptually and empirically used to capture the same phenomenon (each approach having its own advantages and disadvantages), it was deemed appropriate to include a relational control variable only if that variable was substantiated under *both* sets of regression equations.

Based upon this decision criteria and on the regression results, the following control variables were included in hypotheses 1-4 with individual boundary spanning behavior as the dependent variable: age (continuous score); Asian ethnicity (1= Asian; 0 = other), GMAT score (continuous score); marketing functional experience (1=marketing; 0 = other); M&O functional experience (1= M&O; 0 = other); relational race demography score (continuous score). For hypotheses 5-7 with individual leadership and contributions as the dependent variable, the general leadership variable (peer leadership ratings across three previous team settings) was included as a control variable.

Intercorrelations Among Study Variables

Table 5 is presented on the following page and provides the intercorrelations among study variables. In this table, only those control variables that were significantly related to the dependent variables of interest and included in subsequent tests of hypotheses are presented.

TABLE 5.

Intercorrelations of Study Variables

	1.	2.	3.	4.	5.	6.	7.	8.
1. Age	--							
2. Asian	-.06	--						
3. GMAT	-.05	.30**	--					
4. M&O	.07	-.12	-.10	--				
5. Marketing	-.04	-.12	.02	-.27**	--			
6. Relational race	-.04	.29**	-.17*	.15	-.01	--		
7. General leadership	-.08	-.29**	-.21**	.13	.08	.09	--	
8. Self-monitoring	.04	.04	-.19*	-.04	.05	.13	.07	--
9. Proactive personality	-.04	.02	.03	.03	.07	-.03	.06	.20**
10. BS Self-efficacy	.13	-.21**	-.15	.10	.02	.05	.17*	.29**
11. Project value	-.06	.02	.02	.15	-.10	-.17*	.13	.09
12. BS 1: (Clients)	.09	-.20*	-.22**	-.05	.17*	-.07	.15	.13
13. BS 2: (Advisors)	.13	-.19*	-.21**	.03	.13	-.20*	.18*	.19*
14. BS 3: (Scout/Scan)	.17*	-.27**	-.25**	.13	.01	-.10	.23*	.12
15. Network centrality	.14	-.25**	-.25**	.10	.03	-.02	.26**	.08
16. Leadership / contribution	.06	-.28**	-.21**	.09	-.02	-.04	.42**	.21**

(continued on following page)

60

TABLE 5.

Intercorrelations of Study Variables

	9.	10.	11.	12.	13.	14.	15.	16.
1. Age								
2. Asian								
3. GMAT								
4. M&O								
5. Marketing								
6. Relational race								
7. General leadership								
8. Self-monitoring								
9. Proactive personality	--							
10. BS Self-efficacy	.27**	--						
11. Project instrumental.	.11	.36**	--					
12. BS 1: (Clients)	.04	.19*	.01	--				
13. BS 2: (Advisors)	.00	.16*	.16*	.48**	--			
14. BS 3: (Scout/Scan)	.05	.28*	.14	.46**	.60**	--		
15. Network centrality	.03	.29**	.18*	.50**	.48**	.64**	--	
16. Leadership / contribution	.16*	.35**	.21**	.45**	.44**	.48**	.68**	--

Notes.

* *p* < .05. ** *p* < .01. *** *p* < .001.

Results Testing Study Hypotheses

Hierarchical Linear Modeling Null Models

As discussed in the analytic procedures section, I first ran a set of null models within HLM in order to determine the necessity of utilizing HLM to control for group-level sources of variance in the tests of my hypotheses. HLM analyses were not deemed necessary if resulting ICC(1) values from the null models were close to zero and indicated nonsignificant variance residing between groups. Null models were run for each of my 4 dependent variables of interest: boundary spanning to clients, boundary spanning to advisors, scouting / scanning behaviors, and individual leadership and contributions. The resulting ICC(1) values indicated that approximately 26% of the variance in boundary spanning to clients, approximately 56% of the variance in boundary spanning to advisors, and approximately 34% of the variance in scouting / scanning resided between groups. These ICC(1) values and associated chi-square tests indicated that the percentages of between-group variance noted above were statistically significant (boundary spanning to clients: $\chi^2(26) = 64.09$, $p < .000$; boundary spanning to advisors: $\chi^2(26) = 95.40$, $p < .000$; scouting / scanning behaviors: $\chi^2(26) = 189.51$, $p < .000$). Accordingly, HLM was appropriate and necessary for my tests of hypotheses 1-4.

However, less than 1% of the variance in leadership and contributions resided between groups. Furthermore, an assessment of the between-group variance indicated that it was not significantly different from zero ($\chi^2(26) = 23.72$, $p < .500$). Accordingly, HLM was not deemed necessary for my tests of hypotheses 5-7. These hypotheses were tested utilizing OLS regression.

Hypotheses 1-4 postulated that several personality and motivational antecedents would be related to individual boundary spanning behaviors. Table 6 (below) presents the results of the hierarchical linear modeling tests of these hypotheses. Hypothesis 1 suggested that self-monitoring would be related boundary spanning. Self-monitoring was significantly related to boundary spanning to faculty advisors ($\gamma = .26$; $t(134) = 2.01$, $p < .05$). However, self-monitoring was not related to the boundary spanning to clients or to scouting / scanning behaviors. Therefore, hypothesis 1 was partially supported.

Hypothesis 2 suggested proactive personality would be related to boundary spanning. Hypothesis 2 was also partially supported; proactive personality was significantly related to scouting / scanning ($\gamma = .15$; $t(134) = 2.12$, $p < .05$), but was not significantly related to boundary spanning to clients or to faculty advisors.

Hypothesis 3 asserted that boundary spanning self-efficacy would be positively related to boundary spanning behavior. Hypothesis 3 was partially supported; self-efficacy was positively related to both boundary spanning to clients ($\gamma = .16$; $t(134) = 1.97$, $p < .05$) and scouting / scanning ($\gamma = .15$; $t(134) = 2.12$, $p < .05$), but was not significantly related to boundary spanning to advisors.

Hypothesis 4 suggested that instrumentality of the project would be positively related to boundary spanning behavior. Contrary to hypothesis 4, project instrumentality was not significantly related to any of the three boundary spanning behaviors. Therefore, hypothesis 4 was not supported.

As a block, the level 1 predictors explained approximately 15% of the within-group variance in boundary spanning to clients ($R^2 = .15$), approximately 7% of the

within-group variance in boundary spanning to advisors ($R^2 = .07$), and approximately

15% of the within-group variance in scouting / scanning ($R^2 = .15$). The percentages of

within-group variance accounted for by level 1 predictors is calculated as: (total within

group variance per the null model – residual within-group variance after considering level

1 predictors)/ total within-group variance per the null model (Bryk & Raudenbush, 1992).

TABLE 6.

Hierarchical Linear Modeling Results for Predicting Boundary Spanning Behaviors [a]

	BS 1: To Clients		BS 2: To Advisors		BS 3: Scouting / Scanning	
Variable	b	T	b	t	b	t
Fixed Effects						
Intercept	2.75	32.09***	2.82	24.10***	3.26	29.14***
Asian	-.48	-3.93***	-.28	-1.58*	-.29	-2.51*
Age	-.00	-.03	.00	.03	.02	1.51
GMAT	-.00	-1.97*	-.00	-2.05*	-.00	-.37
Marketing	.24	1.67	.17	1.10	-.05	-.39
Mgmt & Org.	.09	.52	.25	.92	.16	.85
Relational Race	.04	.10	.22	.40	.18	.50
Self-monitoring	.08	.59	.26	2.01*	.04	.39
Proactive Personality	-.03	.20	-.05	-.37	.15	2.12*
BS Self-efficacy	.16	1.97*	.07	.64	.15	2.12*
Project Instrumentality	.06	1.00	.11	1.60	.02	.26
$R^2_{within-group}$ [b]		.15		.07		.15

Notes.

N = 145. * $p < .05$. ** $p < .01$. *** $p < .001$. All significance levels are based on two-tailed tests.

[a] All level 1 predictors are group mean centered.

[b] Represents the proportion of within-group variance accounted for by the set of level 1 predictors.

<u>Hypotheses 5a-c: Boundary Spanning Behaviors and Individual Outcomes</u>

Hypotheses 5a, 5b, and 5c initially postulated that boundary spanning behaviors would be positively related to three aspects of individual outcomes: individual contributions to the team, internal leadership, and influence on the project. As previously noted in Chapter 3, Research Methods (measures section), these three aspects of individual outcomes were found to be highly interrelated and subsequently combined into one overall scale. Consequently, hypotheses 5a, 5b, and 5c were combined into one hypothesis (herein referred to as hypothesis 5). Furthermore, as discussed above, the results of the HLM null models determined that OLS regression analyses (not HLM) were appropriate to test all hypotheses with individual outcomes as the dependent variable.

The results of the OLS regression analyses utilized to test hypothesis 5 are presented in Table 7 below. In these analyses, I first entered general leadership as a control variable in Step 1 (presented as Model 1) and then added the three boundary spanning behaviors in Step 2 (presented as Model 3). As shown in Table 7 (Model 3), boundary spanning to clients was significantly related to individual leadership and contributions ($\beta = .25, p < .01$). Scouting / scanning behavior was also significantly related to individual leadership and contributions ($\beta = .22, p < .01$). However, inconsistent with hypothesis 5, boundary spanning to advisors was not significantly related to the dependent variable. Therefore, hypothesis 5 was partially supported.

TABLE 7.

Regression Results for Predicting Individual Leadership and Contributions

Variable	Model 1 ß	Model 1 t	Model 2 ß	Model 2 t	Model 3 ß	Model 3 t	Model 4 ß	Model 4 t	Model 5 ß	Model 5 t
General Leadership	.42	5.81***	.33	4.61***	.31	4.83***	.25	4.56***	.25	4.55***
Information Network Centrality			.62	11.18***			.55	7.23***	.51	6.17***
BS1: To Clients					.25	3.36**	.11	1.63	.14	1.94*
BS2: To Advisors					.13	1.58	.08	1.19	.10	1.41
BS2: Scouting / Scanning					.22	2.79**	-.04	-.47	-.09	-1.10
Centrality x BS1									-.14	-1.15
Centrality x BS2									-.09	-.80
Centrality x BS3									.10.	.86
R^2		.17		.53		.40		.55		.56
$\Delta R^{2\,a}$				.36***		.23***		.02		.01
Model F		33.81***		92.35***		26.72***		38.73***		25.10***

Notes.

N = 164. * $p < .05$. ** $p < .01$. *** $p < .001$.

[a] ΔR^2 report changes from previous model, except for model 3, which reports change statistics from model 1 to model 3.

All significance levels are based on two-tailed tests.

Hypotheses 6a-c: Information Network Centrality as a Mediator

Hypotheses 6a, 6b, and 6c suggested that the relationship between boundary spanning behavior and individual outcomes would be mediated by information network centrality. Again, due to the unidimensionality of the dependent variable, hypotheses 6a, 6b, and 6c were subsequently combined into one hypothesis (herein referred to as hypothesis 6). To test for mediation, I utilized the three-step procedure suggested by Baron and Kenny (1986). The results are presented in Table 7 on the following page (Models 3 and 4) are discussed below.

First, as already noted in the testing of hypothesis 5 and presented in Table 7 (Model 3), two of the three boundary spanning behaviors (boundary spanning to clients and scouting / scanning) were significantly related to individual leadership and contributions. Consequently, only these two boundary spanning behaviors met the first criteria for mediation and were tested further. Second in accordance with Baron and Kenny (1986), boundary spanning behaviors were regressed onto the mediator, information network centrality (results are not presented in Table 7, but are outlined below). Results revealed that both boundary spanning to clients and scouting / scanning significantly predicted information network centrality (boundary spanning to clients, β = .25, p < .000; scouting / scanning, β = .47, p < .000). Lastly, I tested the relationships between boundary spanning behaviors and individual outcomes, after controlling for the mediator. These results are presented in Table 7 (Model 4) and show that after controlling for information network centrality, the relationships between these boundary spanning behaviors (boundary spanning to clients and scouting / scanning behavior) and individual leadership and contributions were no longer significant. Indeed, the regression

coefficients and corresponding t-values dropped substantially, becoming non-significant and indicating full mediation. Full mediation was found for two of the three boundary spanning behaviors and therefore, hypothesis 6 was partially supported.

Hypotheses 7a-c: Information Network Centrality as a Moderator

Hypotheses 7a, 7b, and 7c were presented as alternative hypotheses and suggested that information network centrality would be a moderator in the relationships between boundary spanning behavior and individual outcomes. Again, given the unidimensionality in the dependent variable, hypotheses 7a, 7b, and 7c were combined in one hypothesis (herein referred to as hypothesis 7).   To test hypothesis 7, I followed the procedures outlined by Aiken and West (1991) and entered the control variables and main effects of predictor variables into step 1 of the regression equation, followed by the respective interaction terms in step 2. Three interaction terms were entered into step 2 and each was created as the by-product of the main effects: information network centrality X the respective boundary spanning behavior.   Any variable used as a component of an interaction term was centered (Aiken & West, 1991). The results are presented in Table 7 (Model 5) and reveal no significant interaction terms[2]. Therefore, hypothesis 7 was not supported.

Summary of Results

Partial support for was found for most hypotheses. Results relating to the antecedents of individual boundary spanning behaviors indicated that 1) self-monitoring

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[2] Additionally, as another test of hypotheses 7a-7c, three independent regression equations were run for each interaction separately. Results revealed no significant interaction terms at the p=.05 level.

was positively related to boundary spanning behaviors directed towards faculty advisors; 2) proactively personality was positively related to scouting / scanning; and 3) boundary spanning self-efficacy was positively related to boundary spanning to clients and scouting / scanning. Regarding the consequences of boundary spanning behaviors, two out of the three behaviors - boundary spanning to clients and scouting / scanning - significantly predicted individual leadership and contributions, while boundary spanning to advisors did not significantly predict individual outcomes. Lastly, results revealed that the relationships between these two types of boundary spanning behavior were fully mediated by information network centrality. No support for was found for the alternative hypothesis postulating information network centrality as a moderator to the boundary spanning behavior-individual outcomes relationship.

Post Hoc Analyses

In a supplemental effort to more thoroughly answer my first research question ("What factors influence engagement in boundary spanning behaviors within a team?"), I further explored two potential team level antecedents. As noted above in my discussion of the HLM null model results, significant variance in individual boundary spanning resided between groups (approximately 26% of the variance in boundary spanning to clients resided between groups, approximately 56% of the variance in boundary spanning to advisors resided between groups, and approximately 34% of the variance in scouting / scanning resided between groups). Accordingly, an investigation of potential team level antecedents appeared appropriate and potentially valuable in explaining additional variance in individual boundary spanning behaviors.

Two antecedents – strategic importance of boundary management and project demands – were run as level 2 predictors in HLM. I first provide a brief rationale for the proposed relationships between these antecedents and boundary spanning behavior. I then describe the measures utilized to capture these two constructs and conclude with a summary of the results.

Theoretical rationale. First, the strategic importance of boundary spanning reflects the team's shared perceptions of the value and criticality of boundary spanning functions to the overall success of the team[3]. During initial planning meetings, team members engage in a variety of strategic processes, such as identifying the team mission and overall objectives, formulating team strategies to achieve such objectives, and developing contingency plans in the event of failed strategies (Marks, Mathieu, & Zaccarro, 2001). Teams that highly value boundary spanning activities are likely to incorporate boundary spanning functions into their overall team strategy, monitor these activities accordingly, and actively support and encourage individual team members to engage in boundary spanning behaviors throughout the project (Hackman, 1992). As such, I hypothesized that the strategic importance placed on boundary management would positively relate to individual boundary spanning behavior.

Next, project demands reflect the overall level and intensity of the project. Teams with extensively demanding projects experienced a high level of client expectations in

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[3] Support for the existence of this variable at the team-level of analysis can be found in previous work exploring team boundary management conducted by Ancona and colleagues (Ancona, 1990; Ancona & Caldwell, 1992). After studying newly formed consulting and research and development teams, these authors found strong support that teams differed in their strategies with respect to engaging and managing their external environments. Interestingly, teams that followed a highly visible and external strategy (referred to as probing) significantly outperformed those teams utilizing either a mixed or predominately inwardly-focused strategy (termed parading and informing, respectively). Thus, from this work, evidence is presented that supports the importance of strategic orientations with respect to boundary spanning and reveal that these strategic orientations do vary across teams.

terms of the project and found their project to be complex and challenging (either in terms of client demands or technical requirements). The level of project demands may impact the nature of the team's workload as well as the intensity of the required tasks. On average, teams with highly demanding projects will likely have less time to thoroughly engage in boundary spanning activities as they will be spending intense periods internally coordinating their work and striving to accomplish the required tasks. Support for this assertion can be found in earlier work exploring organizational boundary spanning by Tushman (1979). In this study within a large R&D facility, Tushman found that projects facing challenging environmental conditions produced significantly less external communication as compared to projects facing less challenging and more stable conditions. Accordingly, I hypothesized that project demands would be negatively related to individual boundary spanning behavior.

Measurement. The strategic importance of boundary management variable was measured at time 1 (approximately 4 weeks into the project) via a 4-item likert-type scale with responses provided in the format of 1=strongly disagree; 2= somewhat disagree; 3 = neither disagree or agree; 4=somewhat agree; 5=strongly agree. Items began with the stem "My MBA Consulting team places great importance on…" and included: "…building solid relationships with key external stakeholders (faculty advisors and clients)"; "…getting feedback from outside the team (e.g., from faculty, clients, and other experts)"; "…acquiring knowledge fro this project from persons external to the team"; "collaborating with other professionals (outside of our team) that can offer support and guidance." Cronbach's alpha equaled .87, suggesting acceptable inter-item reliability. r_{wg} equaled .72 (suggesting acceptable levels of within-team agreement), ICC(1) equaled

.07 (revealing that approximately 7% of variance in boundary management importance ratings is attributed to team membership), and ICC(2) equaled .32 (suggesting reliability in the group's average rating). These statistics justified aggregation of the items to the team level of analysis.

Project demands were measured at time 3 (at the completion of the project) via a 2-item likert-type scale with responses provided in the format of (1=not present at all to 7= very much present). Instructions stated to participants, "Please indicate the degree to which each of the following was something your team had to manage as part of your project." Items included "Extremely high level of client demands / expectations related to the project" and "Challenging nature of the project itself (e.g., complex technical requirements)." Cronbach's alpha equaled .76, suggesting acceptable inter-item reliability. r_{wg} equaled .82, ICC(1) equaled .48, and ICC(2) equaled .85. These statistics justified aggregation of the items to the team level of analysis.

Results. Partial support was found for proposed team level variables as significant antecedents to individual boundary spanning behavior. Level 2 results from HLM tests indicated that the strategic importance placed on boundary management by the team significantly and positively related to two of the three types of individual boundary spanning behaviors: boundary spanning to advisors ($\gamma = .66$; $t(24) = 2.86$, $p < .01$) and scouting and scanning behaviors ($\gamma = .80$; $t(24) = 5.26$, $p < .001$). Results also indicated that a high level of project demands significantly and negatively related to two types of individual boundary spanning behaviors: boundary spanning to clients ($\gamma = -.13$; $t(24) = -2.47$, $p < .05$) and scouting and scanning behaviors ($\gamma = -.21$; $t(24) = -2.20$, $p < .05$).

(Note: the relationship between project demands and boundary spanning to advisors was marginally significant at $p < .10$ and in the hypothesized direction).

It is important to emphasize that given the two-level modeling abilities within HLM, the above effects "hold" after consideration of (i.e., above and beyond) the level 1 antecedents presented in hypotheses 1-4 above[4]. As a set, the level 2 predictors explained approximately 8% of the between-group variance in boundary spanning to clients ($R^2 =$ .08), approximately 43% of the between-group variance in scouting / scannig ($R^2 = .43$), and approximately 33% of the between-group variance in boundary spanning to advisors ($R^2 = .33$). The percentage of between-group variance accounted for by the level 2 predictors is calculated as: (total between-group variance per the null model – residual between-group variance after considering level 2 predictors)/ total between-group variance per the null model (Bryk & Raudenbush, 1992).

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[4] It is important to note that given my decision to group-mean center the level 1 antecedents, any potential compositional effects of these individual-level variables are *not* controlled for when considering the predictive value of level 2 (group) antecedents. In other words, while group-mean centering allows me to control for individual-level effects (e.g., an individual's mean score on proactive personality), it does not control for any potential compositional effects (e.g., the team's aggregated mean score on proactive personality).

Chapter 5: Discussion

This dissertation examined the antecedents and outcomes of individual boundary spanning behavior within a sample of consulting teams. Building upon previous work supporting the benefits of boundary management at the team level of analysis (e.g., Ancona, 1990; Ancona & Caldwell, 1992), I sought to understand the drivers of an individual's engagement in boundary spanning behavior as well as the benefits realized as a result of such behaviors. In addition, through two sets of alternative hypotheses, I further explored the linkages between boundary spanning behavior and individual outcomes through a consideration of the potential mediating and moderating effects of information network centrality.

Using data collected from a sample of 171 full-time MBA students comprising 27 consulting teams and across three different time points, my hypotheses were tested via hierarchical linear modeling, hierarchical regression analyses, and social network analyses. The major findings of this dissertation are summarized and interpreted below. This discussion is followed by a consideration of the theoretical contributions and practical implications. I conclude with a discussion of study strengths and limitations and provide directions for future research.

Summary of Major Findings

Personality and Motivation as Antecedents of Boundary Spanning Behavior

Two personality characteristics, self-monitoring and proactive personality, were hypothesized as important antecedents to engagement in boundary spanning behavior as they are likely to predispose an individual to link disconnected parties (such as their team

and important external sources) (Snyder, 1979) and to view their team's external environment as a place to enact change and take initiative (Crant, 2000), respectively. Additionally, boundary spanning is a challenging task for the individual (Katz &Kahn, 1978), requiring both time and effort and often accompanied by demanding and conflicting internal and external pressures (Aldrich & Herker, 1976). Therefore, I hypothesized that two motivational factors, efficacy in the ability to successfully carry out boundary spanning activities and project instrumentality, would predict individual boundary spanning behavior within the consulting teams studied. In general, partial support was found for most hypotheses. Interestingly, results suggest that both the type of boundary spanning activity and the source to which it is targeted are critical elements to consider in predicting this behavior.

Self-monitoring was found to significantly relate to boundary spanning behaviors directed towards faculty advisors. These results suggest that high self-monitors are more likely to establish and maintain connections between their team and their faculty advisors than low self-monitors. Because of their ability to monitor social situations and tailor their behavior accordingly, high self-monitors served as linking bridges between their team and the advisor throughout their projects. The high self-monitors proactively kept their advisor informed of the team's progress, sought out advice and guidance when needed, and made efforts to connect with their advisor in order to better understand and meet his / her expectations of the team.

Interestingly, however, I found that the self-monitoring trait did not significantly predict boundary spanning to clients. This finding may be reflective of the fact that responsibility for connecting to clients was a formally institutionalized role within the

75

team (termed client liaisons). Even though faculty liaison roles were also formally established, the responsibilities associated with the client liaison role were more well-defined and rigid than that of the faculty liaison role. During preliminary interviews with former team members, I noted that when compared to the faculty liaison role, client liaison roles were more standard across teams (that is, less variance existed in the specific actions and behaviors of client liaisons) and were less often shared across individual team members within teams. Consequently, it is likely that the formally and narrowly prescribed role requirements acted as strong situational forces, directing an individual's engagement in boundary spanning to clients and reducing the potential for personality factors to explain significant variance in these behaviors (Barrick & Mount, 1991).

Results also revealed that self-monitoring was not significantly related to scouting / scanning behaviors. This finding might be explained by considering the nature of this type of boundary management activity as compared to the externally-oriented behaviors typically directed toward advisors. Again, through my preliminary interviews, I noted that scouting and scanning behaviors generally required comprehensive searches for a number of external sources of project-related information and less frequently involved continual and repetitive interactions with one particular external source (for example, making a phone call to an industry expert for advice on a technical issue or calling upon a former business colleague for access to information).   As such, boundary spanning activities directed towards these other outside business professionals might be better explained by one's motivation and initiative to seek out external relationships than by the social skills akin to high self-monitors. In contrast, because of their proximity to the team, connecting with faculty advisors was more likely to involve habitual and reciprocal

interactions, which would be attractive to high self-monitors.   Providing some support for this assertion, Snyder's (1979) theory argues that high self-monitors are equipped to "read" and appropriately adapt to a variety of social situations, but provides no direct evidence to suggest that high self-monitors are prone to actively *seek out* social situations that require socially-adaptive behavior.

The second personality attribute, proactive personality, was found to positively predict scouting / scanning behaviors. Results revealed that team members high on the proactive personality trait were more likely to actively collect information from a variety of outsiders to benefit their project. Specific scouting / scanning actions included reaching out to external parties for project-related expertise or ideas and finding out how other MBA consulting teams were progressing on similar projects.

However, contrary to initial expectations, proactive personality did not significantly relate to boundary spanning to either faculty advisors or to clients. This might be related to the fact that, as noted above, both faculty and client liaison roles were formally institutionalized within each team. In contrast, boundary spanning functions in the form of scouting and scanning were not created as formal roles, but rather emerged informally within the teams. As such, personality attributes, such as proactive personality, are likely to exert greater influences over the engagement in boundary spanning behaviors in the absence of formally prescribed role assignments (Katz & Kahn, 1978). Additionally, it is possible that highly proactive persons might perceive the loosely defined opportunities and broad "reach" associated with general scouting and scanning activities as most commensurate with their innate desire to interact with the environment and enact change.

In addition to the personality attributes discussed above, two motivational factors were proposed as antecedents to boundary spanning behavior within teams. Partial support was found for the hypothesized relationship between boundary spanning self-efficacy and actual boundary spanning behavior, suggesting that an individual's confidence in his or her ability to effectively carry out boundary spanning responsibilities positively related to his or her actual engagement in two of the three types of boundary spanning behavior. While self-efficacy positively predicted the extent to which team members established and maintained relationships with clients (i.e., boundary spanning to clients) and actively reached out to outsiders for technical support and project-related expertise (i.e., scouting / scanning), it did not relate to boundary spanning with advisors. The predictive ability of self-efficacy for these two boundary management activities is directly in line with numerous previous studies empirically documenting strong linkages among self-efficacy and behavior across a variety of tasks (see Bandura, 1997).

The non-significant finding with respect to boundary spanning to advisors may again be reflective of the fact that, on average, the advisors are more proximal to the teams and make reciprocal efforts towards establishing a connection with the team. If the faculty advisor regularly contacts and meets with his or her assigned team throughout the project, maintaining the linkage to the advisor may not be perceived as difficult or as challenging as connecting to clients, industry experts, or other business professionals who are less proximal to the team. Consequently, the role of self-efficacy in predicting this behavior would diminish. That is, it may be that one's confidence in their ability to cultivate external relationships is less critical for connecting with this particular target because of the advisor's mutual efforts to connect with the team.

Finally, no support was found for the proposed linkages among perceptions of project instrumentality and boundary spanning behavior. Initially, it was hypothesized that individuals would be more likely to carry out critical team functions such as boundary management if they perceived that their project would provide them a variety of valued outcomes (e.g., promising outcomes for career networking or opportunities to gain desired professional expertise and knowledge). Contrary to this line of thinking, individuals who perceived their projects as highly instrumental in obtaining important outcomes were *not* more likely to engage in boundary spanning behaviors than individuals who rated the anticipated value of their projects as low.

Several reasons may underlie these results. First, the non-significant findings may reflect that project instrumentality is not enough of a motivating force on its own to facilitate boundary spanning by a team member. Potential contingency variables, such as team member priorities with respect to other projects or courses and tight time pressures, may weaken an otherwise positive relationship between one's beliefs about their project's value and their engagement in boundary spanning behaviors. Interestingly, other contingency factors might include individual difference characteristics, namely the two personality traits discussed above. Simply, engagement in boundary spanning behavior may be enhanced when individuals view their project as instrumental in obtaining valued outcomes *and* are predisposed to carry out such behavior.

Secondly, it is possible that a team member's perceptions of a project's overall value are too broad to reliably predict engagement in boundary spanning behaviors. Following expectancy theory assertions (Vroom, 1964), the motivation to expend effort stems, in part, by perceptions of the probability that such efforts will lead to valued

outcomes. While assessing team member perceptions of project instrumentality may capture a general attitude regarding the value of the project, it does not assess the individual's beliefs about the instrumentality of specifically engaging in boundary spanning behaviors. Consequently, an individual may believe that their team's project provides important opportunities and benefits, but might not perceive that boundary spanning activities, in particular, are instrumental for obtaining these desired outcomes.

Boundary Spanning Importance and Project Demands as Group-Level Predictors

In addition to within-group sources of variance, results from the HLM null models showed that significant variance in individual boundary spanning behavior resided between groups. Post hoc analyses revealed that two team level variables – strategic importance of boundary spanning and project demands – significantly predicted the extent to which individuals engaged in boundary spanning within their teams.

Interestingly, shared perceptions of the strategic importance of the boundary spanning function exerted a strong influence on the actual engagement in boundary spanning behaviors on the part of the individual team members. In line with previous teams research exploring the influence of groups on individuals (Hackman, 1992; Hackman, Brousseau, & Weiss, 1976), teams that collectively valued external connections provided persuasive stimuli, signaling the importance and appropriateness of boundary spanning behavior by the individual team members.

In addition, the level of project demands was found to diminish individual boundary spanning behavior within the consulting teams in this sample. Members who belonged to teams facing highly demanding and technically complex projects were less likely to engage in boundary spanning activities throughout their projects. The nature of

this negative relationship may be due to the time pressures that demanding projects place on team members, constraining their ability (and perhaps even their motivation) to engage in boundary spanning activities. Related evidence suggesting that external threats may cause groups to act rigidly (that is, restriction in information processing and increases in group cohesiveness at the expense of decreases in inter-group ties) was put forth by Staw, Sandelands, and Dutton (1981).

When interpreting these post hoc analyses in conjunction with the tests of original hypotheses, the results strongly suggest that in order to predict engagement in boundary spanning behavior we must consider a combination of variables at both the individual and team levels of analysis. While individual difference variables, such as personality and motivation, exerted some influence on team member behavior, group level variables must also be included when predicting boundary spanning. Additionally, although not directly tested in this dissertation, future research might further explore any potential cross-level interactions that might exist among these antecedents.

Outcomes of Boundary Spanning Behavior

In line with both social capital theory and social network perspectives, it was hypothesized that individuals who engaged in boundary spanning activities would also be rated as internal leaders and contributors by their teammates. Social capital theory (Nahapiet & Ghoshal, 1998) argues that there are benefits associated with informational and social resources embedded within one's network of social relationships. The theory suggests that the development of social ties provides a valuable web of resources, such as the development of trust, exchange of information, and acquiescence of social support, all

81

of which can be translated into a variety of positive gains for the individual. Boundary spanners, for example, who establish connections with important external sources such as clients, advisors, and other business professionals, consequently gain access to a wealth of social and information capital that they can then contribute to the team. In addition to social capital theory, social network perspectives such as Burt's (1992) structural holes theory asserts that individuals who occupy "bridges" connecting otherwise disconnected parties have structurally advantageous positions. Boundary spanners hold such key positions in that they link the team to integral external sources of social support and project-related information. As such, these actors can expect to realize a unique source of power and influence within their social network (Burt, 1992).

Results revealed that two of the three boundary spanning behaviors were both significantly and positively related to individual leadership and contributions. Boundary spanners who either established connections with clients or engaged in scouting / scanning behaviors were perceived as important and valued *internal* sources that were consistently relied upon by their teammates. In contrast, however, boundary spanners who established and maintained connections with the team's faculty advisor did not realize the same positive outcomes. While the direction of this relationship was consistent with my initial hypotheses, boundary spanning to advisors did not significantly relate to peer ratings of individual leadership and contributions. Somewhat surprisingly, members of the current consulting teams did not appear to value efforts made on the part of individual team members to establish linkages to their faculty advisor as much as efforts to create ties to other external sources, namely client contacts and other business experts.

The non-significant finding between boundary spanning to advisors and individual outcomes may be due to several factors. First, my interview data suggested that while faculty advisors often regularly attended many of the scheduled team meetings, they were not often perceived as valued sources of task-related knowledge or ideas. This may stem from the occasional "mismatch" situation that may occur when the faculty advisor legitimately does not have technical expertise in their team's project domain. Alternatively, and more often the case, this may be because as leaders of self-managing teams, the advisors often act a facilitators or coaches as opposed to directly monitoring project details. While these facilitative roles are arguably important to the overall success of the team (Zaccarro & Marks, 1999), the team members themselves often did not seem to perceive the advisor role as a critical resource for the team. Naturally, if this perception exists and proliferates throughout the team, boundary spanners who connect their team to their advisor would not be perceived as maintaining an important external linkage.

Alternatively, the lack of support for my initial hypothesis may be due to the fact that boundary spanning behaviors directed toward advisors are often carried out by several, if not most, of the individuals on any given team. As mentioned earlier, if the advisors regularly attend team meetings and frequently interact with multiple team members (either for reasons directly related to the consulting project or for other academic or professional reasons), it is likely that several of the team members actively seek feedback and guidance from the advisor throughout the project as well as update him or her on the team's progress. In support of this notion, during my preliminary interviews I noted that the formalized faculty liaison roles were often shared across

multiple team members. Consequently, if the majority of team members are actively maintaining a connection to the team's advisor and this function is diffused across team members, then engagement in this type of boundary spanning behavior is not likely to be perceived as paramount or unique enough to warrant high ratings of individual leadership or contributions.

Overall, results generally support the assertions touted by social capital theorists (e.g., Nahapiet & Ghoshal, 1998) and social network researchers (e.g., Burt, 1992), suggesting that establishing important social connections provide- the individual with a unique source of power and influence. Together, boundary spanning to clients and scouting / scanning behaviors explained nearly 40% of the total variance in individual leadership and contributions, suggesting that these behaviors were strongly valued by the members of the current consulting teams. It important to highlight that these effects were found even after controlling for the degree to which team members demonstrated leadership in other previous capacities. Thus, one's general leadership skills and abilities are not accounting for the relationship between engagement in boundary management behavior and peer ratings of leadership and contributions to the team. These findings complement previous work investigating the performance benefits associated with boundary spanning at the team level analysis (e.g., Ancona, 1990), suggesting that the team members carrying out boundary spanning behaviors can expect personal benefits as well.

<u>Mediating Role of Network Centrality</u>

Given the positive outcomes stemming from individual boundary spanning, I further explored the mechanisms through which this relationship exists. Interestingly, results provided strong support for the mediating effect of information network centrality, while no support was found for the alternative hypothesis asserting network centrality as a moderator to the boundary spanning behavior-outcome relationship. These findings strongly suggest that acquiring a highly central position within the team's internal information network fully accounts for (i.e., fully mediates) the outcomes associated with boundary spanning behaviors.

In the current sample of consulting teams, team members who engaged in either boundary spanning behavior directed towards clients or carried out scouting / scanning behaviors involving other external sources, were also perceived *internally* by their teammates as important sources of project-related information. Findings suggest that as a result of their connections with these key external parties (client contacts, other business professionals, and industry experts), the boundary spanners were highly valued by their teammates and perceived as integral "conduits" of information throughout the project. Thus, as their peers consistently looked to these individuals for information and knowledge, the boundary spanners became highly central figures within the team's internal social network structure. Again, directly in line with social capital and social network theories (e.g., Burt, 1992; Nahapiet & Ghosal, 1998), the findings suggest that it is by virtue of acquiring these central positions, that the boundary spanners obtain unique sources of power and influence within the team and are perceived by their peers as such valued team members.

Theoretical Contributions

Several theoretical contributions stem from this dissertation and serve to promote research opportunities for future study. In this section, I highlight four primary theoretical contributions.

First, this dissertation is an initial step towards understanding the factors that facilitate individual boundary spanning behavior. In particular, my findings provide empirical evidence that personality and motivational factors are pertinent antecedents in predicting this important behavior within consulting teams. Furthermore, in addition to individual level drivers of boundary spanning, this work also emphasizes the importance of the team context in facilitating such behavior. Above and beyond personality and motivational factors, aspects of the group, such as the strategic value placed on boundary spanning as well as the level of the demands placed on the project team, are likely to exert strong influences on an member's actual engagement in boundary spanning activities. As such, this study begins to answer recent calls for research to directly explore predictors of individual boundary spanning within teams (e.g., Ancona & Caldwell, 2000) and highlights the necessity for future researchers to consider a range of multi-level antecedents of boundary spanning behavior.

Second, through an investigation of the consequences associated with individual boundary spanning behaviors, I build upon and expand Ancona and colleagues' previous work exploring team level boundary spanning (e.g., Ancona, 1990; Ancona & Caldwell, 1992). My research findings complement their earlier findings (which suggested boundary spanning as an important team process predictive of overall team effectiveness) and indicate that the individual team members carrying out this critical team function can

expect to realize positive consequences. These findings inform existing literature exploring team boundary management by suggesting that the motivation and propensity for team members to engage this critical team function should be high as boundary spanners are consistently rated as team leaders and contributors. Furthermore, my results are relevant for understanding the functionality and efficacy of externally-oriented team member roles, and they contribute to the broader teams literature by suggesting the importance of roles as essential structural elements in facilitating critical team processes (Smolek, Hoffman, & Moran, 1999). Finally, expanding upon Ancona's earlier work, this is the first study to theoretically and empirically suggest the benefits associated with boundary management at individual level of analysis within a team setting.

Thirdly, this study also offers a finer-grained understanding of the nature of boundary spanning behavior. Extending beyond previous research focusing exclusively on the type of the boundary spanning activity, this study additionally highlights the role of the particular external target and begins to shed light on the differential relationships among the antecedents and outcomes associated with boundary spanning to various targets. While previous research studies exploring organizational (e.g., Aldrich & Herker, 1976; Tushman & Scanlan, 1981a; 1981b) and team boundary management (e.g., Ancona & Caldwell, 1992) have focused predominately on varying boundary management functions, no attention has been paid to the specific target of these boundary spanning activities. My results indicate that in addition to considering the type of boundary spanning behavior (e.g., representing the team versus general scanning for information), it is equally important to consider the target (e.g., clients versus faculty advisors) of that behavior. I found that the predictors and outcomes of individual

boundary spanning varied across targets, thereby suggesting that *to whom* the behavior is directed is of consequence. Accordingly, past findings revealing differences in performance benefits across boundary management strategies (e.g., Ancona & Caldwell, 1992 suggested buffering and task coordination were more beneficial than general scanning behaviors in the short term) might be further informed through a deeper consideration of the particular target to which those activities were directed. Interestingly, in the current consulting teams of interest, it appears that not all external connections are equally valued.

Interestingly, results from the current sample suggest that relative to the other two types of boundary spanning behaviors, efforts directed towards establishing and maintaining relationships with clients are the most important predictors of individual effectiveness within externally-dependent consulting teams. This finding is not surprising as meeting and exceeding client expectations are among the highest priorities of team members operating within professional services environments. As such, it is reasonable to expect that it is those team members who are actively striving to cultivate effective relationships with their clients who are viewed internally by their peers as influential leaders and valued contributors to the team. Also as expected, in addition to boundary spanning to clients, scouting and scanning behaviors are clearly important within consulting teams, as well as within other externally-dependent work teams, as they rely heavily on obtaining and leveraging sources of outside information and expertise to generate innovative solutions to business problems and client needs.

Finally, I contribute to the existing research on boundary spanning through an integration of social network theory into the boundary spanning literature. Results

suggest that it is through acquiring a highly central internal network position, that boundary spanners realize important individual level outcomes. Interestingly then, this study indicates that within the current consulting teams, boundary spanners consistently occupied highly central internal network positions. When interpreting these findings in light of previous work highlighting the time and effort necessary to maintain network ties (e.g., Brass, 1984; Granovetter, 1973), it seems rather noteworthy that these individuals were able to maintain a variety of external and internal ties simultaneously. In his classic piece, Brass (1984) suggested that because boundary spanners were more outwardly directed in their focus, this role would be incompatible with highly central internal network positions. He specifically argued, "assuming that an individual employee can effectively maintain only a limited number of workflow connections, external connections would logically distract from the possibility of internal centrality" (p. 523). Katz and Kahn (1978) similarly alluded to the difficulties inherent in maintaining boundary spanning roles and remaining connected within the organization. Interestingly, however, this current study provides some preliminary evidence that these difficulties may not be as prevalent in the team setting. Given the smaller and more intimate nature of team internal network structures, it is plausible that occupying both peripheral and central positions becomes more manageable.

Practical Implications

Several practical implications also stem from the findings of this dissertation. In the following paragraphs, I first discuss the potential implications for team members operating within externally dependent teams. I then consider practical implications for

managers and supervisors leading these types of teams as well as for the organizations

that seek to create and deploy externally dependent work teams.

First, this study reveals that efforts to carry out boundary spanning roles and

responsibilities are highly valued by teammates and peers. Accordingly, members of

externally dependent teams, such as consulting teams, project teams, and new product

development teams to name a few, will be well served to actively manage external

connections for their team. Specifically, team members striving to improve their

reputation and / or perceived value within the team should be encouraged (e.g., by team

leaders, etc.) to take on boundary spanning roles or responsibilities. Additionally, team

members who are assigned to formal boundary spanning roles will benefit from

continually enhancing their efficacy and confidence within this task domain. To that end,

boundary spanners should seek out positive and compatible role models and develop task

specific strategies in order to realize performance benefits and build their efficacy beliefs

(Bandura, 1997).

Important implications can also be realized for the leaders of externally dependent

work teams. Based upon the current findings, team leaders can utilize several strategies

to facilitate boundary spanning in their teams. First, special care may be taken to select

and assign the appropriate individuals to boundary spanning roles. Specifically, these

results suggest that proactive personality and self-monitoring are two personality traits

that are likely to predispose an individual to engage in and carry out boundary spanning

activities within their teams. Additionally, once the team is selected, it is imperative for

the leaders of externally dependent teams to enhance member efficacy beliefs regarding

their ability to successfully carry out boundary spanning activities. Potential ways to

increase boundary spanning self-efficacy are through consistent verbal persuasion and positive reinforcement, providing the individual with appropriate models and examples of exemplary boundary spanning behavior, and offering timely and constructive feedback on specific boundary spanning tasks (see Bandura, 1997 for a review of self-efficacy enhancing strategies). Finally, as the leader of the team, particular attention must be paid to the formation of norms within the group (e.g., Hackman et al., 1976) as well as other contextual influences that can be managed by the leader (Hackman, 1992). During initial planning meetings, the team leader should encourage boundary spanning behaviors as well as emphasize the value of such activities in order to facilitate shared perceptions regarding the strategic importance of external team processes (Kozlowski, Gully, Salas, & Cannon-Bowers, 1996). Throughout the project, it is also important for team leaders to monitor the level of project demands and to manage and / or minimize situations in which the team is facing extremely demanding or challenging projects that may limit member time and/or motivation to engage in boundary spanning (Hackman & Walton, 1998).

Finally, at the organizational level, upper management should realize that boundary spanners within teams are likely to be consistently rated as internal leaders and contributors and thus, may be promoted and rewarded more often within the organization. Given this current study as well as previous studies conducted by Ancona and colleagues (e.g., Ancona, 1990; Ancona & Caldwell, 1992), boundary spanning behaviors appear to provide important benefits at both the individual and team levels of analysis, which are likely to result in positive organizational outcomes. As such, organizations wishing to promote these important behaviors on the part of their employees should be sure to

provide a clear "lines of sight" by adequately and consistently encouraging, supporting, and rewarding individuals taking on boundary spanning roles and responsibilities within their teams.

Study Strengths and Limitations

The current findings and accompanying implications must be considered in light of the study's strengths as well as its limitations. In the following paragraphs, I discuss considerations surrounding the study sample, design issues, potential measurement concerns, and theoretical specification.

Regarding sample considerations, the current study investigated boundary spanning behaviors within a set of consulting teams comprised of full-time MBA students. These MBA teams provide a realistic picture of professional consulting teams working in organizations and are authentic examples of externally dependent work teams. The teams are contractually bound by engagement letters signed by both the team and the client, they face high levels of time pressure and challenging project requirements, and are relied upon by their clients to provide actionable, independent recommendations to real business problems. These teams are undoubtedly linked to their external environment, dependent upon client contacts and other business professionals for sources of pertinent project information and responsible for directly managing and meeting client and faculty expectations.

However, while the teams were indeed responsible for completing an authentic consulting engagement, the current teams varied in several ways to that of professional consulting teams. Three primary differences are highlighted below and should be

accounted for when interpreting and / or attempting to generalize the current study findings.

First, the team members did not receive monetary compensation for their work, but rather earned a course grade towards their degree, with the hope of learning and developing particular skills as a result of their consulting experience. As such, these team members are likely to differ from professional full-time consultants in their overall attitudes and expectations towards the purpose of the consulting project.

Secondly, the roles of the faculty advisors are in some ways idiosyncratic to the current team context. While the advisors acted in a similar fashion as managers of self-managing professional consulting teams, they operated primarily within a developmental capacity. Thus, feedback and evaluations provided to the team members were predominately for the purposes of facilitating learning and skill development and were thereby quite different from many organizational appraisal processes. Furthermore, faculty advisors were unlikely to be as invested in the overall performance of the team, as is the case with full-time professional managers, as the advisors were not formally evaluated based upon their teams' performance.

Finally, in the current MBA consulting teams, team members were formally assigned to two boundary spanning roles (client liaisons and faculty liaisons). While formalized roles do often exist in organizational consulting teams, they are generally based upon one's tenure, experience, and formal position within the team (e.g., senior consultants are likely to be formally responsible for direct contact with primary client personnel). In the current consulting teams, formal roles were assigned based upon interest and were often self-selected, rather than based on formal position title or rank.

Regarding design considerations, special care was taken to separate independent and dependent variables across three different time points in order to minimize common method biases. While this strategy provided additional confidence in emerging relationships, it is important to note that individual boundary spanning behaviors, network centrality, and individual leadership and contribution ratings were provided by the same source and were measured via a similar matrix format. However, mitigating the concerns for biases resulting from common method, the three variables were assessed as the average rating across *all* team members excluding the target (as opposed to any one individual's assessment of all three variables) and were captured across three different time points (further reducing the tendency for bias). For example, while both behavioral and outcome measures were peer-rated, these two constructs were assessed as aggregate ratings and were measured at two different points in time (boundary spanning behavior was measured at time 2 and individual leadership and contributions was measured approximately 8 weeks later at time 3). Finally, with respect to study design, it is also important to note that a more rigorous test of mediation would require a temporal ordering of the mediating variable, information network centrality. While the measurement of the independent and dependent variables were separated in time (as described above), information network centrality was captured at time 2 in conjunction with the assessment of boundary spanning behaviors.

With respect to measurement issues it should first be noted that individual boundary spanning behaviors were captured through a scale developed for this current study. Special care was taken to adapt previously established scale items from Ancona and Caldwell's (1992) study, however, the validity of this scale should be assessed within

different samples. While scale reliability analysis and exploratory factor analyses

provide reasonable assurance of inter-item consistency and underlying factor structure,

respectively, the validity of this scale needs to be more rigorously tested.

In addition, the assessment of boundary spanning self-efficacy occurred at time 1,

approximately 4 weeks into the project. Accordingly, given that the team members had

already been working together for several weeks, carrying out various roles and

responsibilities, it is possible that my assessment of member confidence in his / her

ability to maintain effective external relationships was confounded with existing

processes and events occurring during the consulting project. While, special care was

taken in my instructions to participants, asking respondents to respond to questions based

on their *past* experiences working in teams, the potential for confounds still remains.

Lastly with respect to measurement issues, as noted in the methods section, there

are multiple ways to operationalize information network centrality. The current study

utilizes only one such measure (the sum of ratings directed towards the focal individual).

As such, this measure does not take into account the *relative* centrality of the focal

individual versus his / her other team members, but rather captures team member

perceptions of the focal individual's ability to provide useful information.   It should be

highlighted that different operationalizations of information network centrality, such as

closeness, betweeness, and relative measures (see Brass and Burkhardt, 1992 for a

discussion), provide varied assessments of network centrality and may yield dissimilar

results if utilized in tests of study hypotheses.

Finally, considerations surrounding theoretical specification should also be

highlighted. While the current study explores a variety of antecedents and consequences

associated with individual boundary spanning behaviors, additional variables might have been included. For instance, this study does not address or discuss the existence of pre-existing ties that may potentially influence team members' ratings of each other on important behaviors and outcomes. Specifically, for those team members with a history working with one another, high levels of familiarity or strong friendship ties may have shaped (biased) their perceptions of their fellow teammate's behaviors, leadership, and contributions. Additionally, other personality traits and team contextual elements could have been investigated (as outlined below in the following section).   Furthermore, an investigation of additional outcome variables, particularly relationships existing across multiple levels of analysis, would have further specified my hypothesized model. Specific suggestions for future research in these domains are provided in the section below.

Directions for Future Research

First, future research should seek to further explore the benefits of individual boundary spanning behaviors through attempts to replicate and generalize the current findings within other types of externally dependent teams. Specifically, through replication attempts within organizational settings, it would be fruitful to explore whether or not boundary spanning behavior within a variety of external dependent teams (e.g., project teams, new product development teams, task forces) positively predicts individual performance appraisal ratings and member reputation within the team and the broader organization.

It would also be noteworthy for future research to explore additional individual level consequences, including positive outcomes such as those noted above (job

performance, reputation) as well as potentially adverse outcomes. Interestingly, while

boundary spanners may realize important sources of power and influence as a result of

their position / role, carrying out these roles and responsibilities can be a challenging and

demanding task (Aldrich & Herker, 1976; Katz & Kahn, 1978). As such, future research

may seek to explore the potential for boundary spanners to report higher levels of role

conflict, ambiguity, and stress.

Interestingly, additional studies may wish to investigate the potential for high

levels of individual boundary spanning behavior to be dysfunctional within the team

setting. Ancona and Caldwell (1992) noted that prolonged and /or excessive scouting and

scanning behaviors yielded negative affects for overall team effectiveness, causing the

team members to focus too heavily on the search for external information without

adequate attention given to capturing that information, disseminating it within the team,

and effectively leveraging it to maximize performance.   Additionally, in her earlier

study, Ancona (1990) found that while team boundary management processes positively

related to overall team performance, the benefits were accompanied by short-term deficits

in internal team processes, such as team coordination and conflict-management. It would

be interesting to explore further whether an individual's engagement in boundary

spanning similarly yields potentially negative effects in the short-term, either in terms of

role conflict and stress as noted above, or in terms of other performance dimensions

requiring a predominate internal focus (e.g., managing internal team relationships and

completing assigned tasks in a timely manner). Additionally, future research might

explore the possibility that maximum levels of specific types of boundary spanning

behaviors exist, after which individual performance, leadership, and contributions outcomes realized by the boundary spanner begin to decline.

Future studies might also explore the linkages between members' boundary spanning behavior and the team's overall performance, with special attention given to the issue of operationalizing team composition (Barrick, Stewart, Neubert, & Mount, 1998; LePine, 2003). For instance, if it were assumed that a team's task requires all team members to work interdependently, such that the inputs and efforts of each member combine in a collective outcome, it would be appropriate to utilize an aggregate compositional measure to operationalize team boundary spanning (see Barrick et al., 1998). In this case, higher mean levels of boundary spanning behavior should positively relate to team performance (Ancona, 1990). Alternative assumptions could be made, however, that only one member must perform particularly well on critical tasks to sustain the team's overall performance (reflecting a disjunctive task; Steiner, 1972). In this case, team performance would be contingent upon the effectiveness of this "best performer" (Steiner, 1972) and therefore one would expect that the score of the team member with the highest ratings of boundary spanning behavior would be predictive of the collective performance of the team. Future research should explore these compositional issues theoretically as well as empirically.

In addition to outcomes, further specification regarding the antecedents of boundary management is needed. While this dissertation begins to highlight several facilitators of individual boundary spanning behavior, there are numerous avenues for future research to build upon this work. First, additional individual level predictors should be theorized and explored. Specifically, extraversion (Barrick & Mount, 1991)

and external locus of control (Rotter, 1966) may be fruitful variables to study further. Additionally, while not of primary focus of this study, several demographic characters acted as significant control variables and thus, may reliably predict boundary spanning behavior within certain team contexts (e.g., age, functional background, ethnicity). Regarding functional expertise, one particular area of study may be to investigate the role of functional breadth (Bunderson & Sutcliffe, 2002) in predicting boundary spanning behavior. Specifically, it is plausible that individuals with multi-functional backgrounds may be more adept at connecting and communicating with a variety of external sources outside of the team.

Regarding team level predictors, in the current study, I found that the team's perception of the strategic importance of boundary spanning as well as the level of project demands, explained a considerable portion of between group variance in individual boundary spanning behavior. To provide further credence to these results, future research should strive to replicate these findings within a variety of organizational work teams. Additional team level predictors, such as external team leadership style, are likely to have strong implications for individual boundary spanning behavior and should also be explored further. Druskat and Wheeler (2003) have provided evidence that effective team leaders actively engaged in boundary spanning on behalf their teams, however, they did not assess whether or not the leader's behavior or style yielded higher levels of boundary spanning on the part of the team members themselves.

Another promising area for future research is to further investigate the role of the particular external source or target of boundary spanning efforts. Given the current findings, it may be that the individual level performance benefits associated with

boundary spanning has to do with the type of activities pursued as well as the sources to which they are targeted. Accordingly, finer-grained theoretical arguments regarding of the specific nature and dimensionality of boundary spanning seems is needed. Future research should seek to develop a theoretical framework to address and more fully understand the potentially differential relationships across varying types of boundary spanning behaviors as well as across the different targets of those behaviors.

Finally, as discussed above, the current study revealed that externally oriented boundary spanners were also consistently reported as highly central figures within the team's internal social network. Future research should further investigate this phenomenon to see if these findings replicate within different types of externally dependent teams, particularly organizational work teams. Further, additional work identifying potential mitigating conditions that might either enhance or diminish the boundary spanning-internal network centrality relationship would be particularly helpful in advising and coaching team members. Perhaps certain individual characteristics, such as personality or motivation, or even team-level characteristics, such as team norms or project demands, play important moderating roles in this relationship.

Conclusion

Recent teams research has realized a shift from its traditional focus on internal team processes, such as team coordination, communication, and conflict management, to a new focus on external team processes reflecting the team's efforts to manage its environment (Ilgen, 1999). Ecological models of team effectiveness such as those offered by Gladstein (1984) and Sundstrom, DeMeuse, & Futrell (1990) emphasize the

importance of managing the team's boundary while empirical work conducted by Ancona and colleagues reveals the linkages between team boundary management processes and overall team effectiveness. Building upon and extending this research, the current dissertation explored the facilitators and implications of a team member's engagement in specific boundary spanning behaviors on behalf of their team.

Support was found for both individual as well as group factors as important predictors of engagement in boundary spanning behavior.   Additionally, and perhaps most noteworthy, this dissertation suggests that boundary spanners are highly valued by their peers. Those members interacting with client contacts and performing general scanning / scouting of the environment were consistently rated as influential leaders and strong contributions within the team.   Accounting for these relationships, boundary spanners realized central positions within the team's internal network and were perceived as critical sources of project-related information by their teammates.

Appendix 1: Interview Protocol

<u>Greeting and introduction</u>

<u>Brief introduction about team roles</u>
When working in a team, different roles emerge among team members over time. For instance, consider the various roles on a basketball team. Different roles among team members include the point guard (who is responsible for bringing the ball up the court), the center (who plays "down low" in the paint), and the shooting guard (who is responsible for shooting outside shots). Additionally, roles that members play are not simply equivalent to different positions / titles or to explicitly stated task responsibilities. For instance, an additional role may also include the team "cheerleader" who is the member that always seems to give the team a pep talk when needed.

Interview Questions
(Existence and nature of team roles)
1. What do you think were the critical roles in your team?
2. Why were they important to your team?
3. How and when were those roles formed (informal / formal; basis for selection)?
4. Did these the roles change over time?
5. To what extent to individuals share multiple roles on the team?

(Nature of interviewee's role)
6. What was your role(s) on the team?
7. What were the behaviors and responsibilities that accompanied your role?
8. What did you like / what did you not like about your role?
9. How did your role contribute to the effectiveness of the team?
10. Tell me about a time you were particularly effective (ineffective) in your role?

(Establishment of key external connections and resources)
11. When you got your project, who were the people that came to mind to go to for support, information, advice?
12. How and when was it determined who went out to who (clients, faculty, other professionals)?
13. What other sources did you or your team go to?
14. How were issues / difficulties with the client resolved? Faculty advisor? MBA office?

Appendix 2: Survey Measures

Proactive Personality (Batemen & Crant, 1993)
To what extent do you agree with the following statements? (1= strongly disagree; 5 = strongly disagree)
1. I am constantly on the lookout for new ways to improve my life.
2. Wherever I have been, I have been a powerful force for constructive change.
3. Nothing is more exciting than seeing my ideas turn into reality.
4. If I see something I don't like, I fix it.
5. No matter what the odds, if I believe in something I will make it happen.
6. I love being a champion for my ideas, even against others' opposition.
7. I excel at identifying opportunities.
8. I am always looking for better ways to do things.
9. If I believe in an idea, no obstacle will prevent me from making it happen.
10. I can spot a good opportunity long before others can.

Self-Monitoring (Lennox & Wolfe, 1984)
To what extent do you agree with the following statements? (1= strongly disagree; 5 = strongly disagree)
1. In social situations, I have the ability to alter my behavior if I feel that something else is called for.
2. I am often able to read people's true emotions through their eyes.
3. I have the ability to control the way I come across to people, depending on the impression I wish to give them.
4. In conversations, I am sensitive to even the slightest change in the facial expression of the persons I'm conversing with.
5. My powers of intuition are quite good when it comes to understanding other's emotions and motives.
6. In can usually tell when others consider a joke in bad tastes, even though they may laugh convincingly.
7. When I feel that the image I am portraying isn't working, I can readily change it to something that does.
8. I can usually tell when I've said something inappropriate by reading the listener's eyes.
9. I have found that I can adjust my behavior to meet the requirements of any situation I find myself in.
10. If someone is lying to me, I usually know it at once from that person's manner of expression.
11. Once I know what the situation calls for, it's easy for me to regulate my actions accordingly.

Self-Efficacy in Boundary Spanning (developed for this study)
To what extent do you agree with the following statements? (1= strongly disagree; 5 = strongly disagree)
Based upon my past experiences working in teams, in my MBA consulting team, I feel very confident…
1. …managing the expectations of important team stakeholders (i.e., individuals outside of the team that have a stake in the project, such as faculty advisors and clients).
2. …establishing a good rapport with key stakeholders external to the team.
3. …being an advocate for my team to important external contacts, if necessary.
4. …soliciting feedback for my team from relevant external parties.
5. …representing my team to other external parties as we discuss project business.
6. …initiating contact with persons outside of the team to discuss team-related problems.
7. …maintaining external relationships that may be helpful to my team.
8. …establishing connections with outsiders to the team that can provide the team with guidance / support.

Instrumentality of the project (developed for this study)
To what extent do you agree with the following statements? (1= strongly disagree; 5 = strongly disagree)
1. This consulting engagement will provide me an opportunity to establish important contacts.
2. This project will provide a promising avenue for career networking / recruiting.
3. I see this project as a valuable opportunity to gain necessary professional expertise and knowledge.
4. Working on this team will enable me to learn more about a particular functional domain where I would like to gain experience.
5. This project will help me obtain useful leadership experience.
6. I see this project as a valuable opportunity to gain hands on experience.

Individual Boundary Spanning Behaviors (developed for this study, adapted from Ancona & Caldwell, 1992)
For each of your team members listed on the first row of the matrix below, please respond to the following statements on the left-hand column using the rating scale below by circling the appropriate number. Please do not rate yourself. (1= not at all; 5 = to a very great extent).

Please NOTE that the term "outsiders" in the items below means individuals outside of your consulting team (e.g., faculty advisor, clients, other faculty, business professionals, other MBA teams, etc. with whom your team has some sort of contact with on this project.

To what extent does this team member…	Name: xxx	Name: xxx	Name: xxx
…keep the client informed of your group's activities?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…coordinate activities with other groups/ people in the client organization as needed tot complete your team project?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…build relationships with your client to better manage their expectations and understand their needs?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…procure things which the team needs from other groups or individuals in the client organization?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…prevent outsiders from "overloading" the team with too many requests?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…persuade outsiders (e.g., faculty, clients) to support team decisions?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…collect information from outsiders that benefit your project?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…reach out to individuals outside of your team that can provide project-related expertise or ideas?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…acquire resources / access (e.g., access to information, access to clients) for the team?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…find out how other MBA groups are progressing on similar projects?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…proactively seek the advice of your faculty advisor?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…keep your advisor updated on your team's progress?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…build relationships with your advisor to better manage his/her expectations for your project?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Information Network Centrality (Morrison, 2002)
For each of your team members listed on the first row of the matrix below, please respond to the following statements on the left-hand column using the rating scale below by circling the appropriate number. Please do not rate yourself. (1= not at all; 5 = to a very great extent).

To what extent:	Name: xxx	Name: xxx	Name: xxx
…is this person a valuable source of information to you on this project?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Individual Leadership and Contributions (developed for this study, adapted in part from Taggar et al., 1999)

For each of your team members listed on the first row of the matrix below, please respond to the following statements on the left-hand column using the rating scale below by circling the appropriate number. Please do not rate yourself. (1= not at all; 5 = to a very great extent).

To what extent did this team member…	Name: xxx	Name: xxx	Name: xxx
…assume a leadership role on your team?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…exemplify effective leadership skills during your project?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…substantially influence the direction of this project?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…influence important decisions for your team on this project?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…play an influential role in shaping team members' thinking on the project?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…provide high quality contributions to the project?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…contribute original ideas that have benefited the project?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…follow through on commitments to the group?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
…share his/her expertise in ways that benefited the group?	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

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