

# Understanding Collaboration Outcomes From an Extended Resource-Based View Perspective: The Roles of Organizational Characteristics, Partner Attributes, and Network Structures<sup>†</sup>

Bindu Arya\*

*College of Business Administration, University of Missouri–St. Louis, St. Louis, MO 63121*

Zhiang (John) Lin

*School of Management, University of Texas at Dallas, Richardson, TX 75083*

---

*Whereas mainstream strategy research tends to focus on atomistic and profit-seeking firms, this study focuses on not-for-profit organizations that participate in a collaboration network. Specifically, the authors extend the resource-based view by investigating how not-for-profit organizations' collaboration outcomes, reflected through a joint consideration of monetary and nonmonetary dimensions, may be affected by their organizational characteristics, partner attributes, and network structures. Their analyses of collaboration data from 52 not-for-profit networked organizations demonstrate the importance of unique resources at individual, dyadic, and network levels that allow these organizations to develop capabilities and competencies.*

**Keywords:** *extended resource-based view; collaboration networks; not-for-profit organizations*

---

Growing participation of organizations in collaborative relations has led researchers to explore how different factors may contribute to organizational competitive advantage. The

---

<sup>†</sup>We thank the associate editor Jerry Goodstein and three anonymous reviewers for their constructive feedback and support throughout the review process. Helpful comments from Greg Dess and Livia Markoczy on an earlier version of the article are also acknowledged.

\*Corresponding author. Tel.: 314-516-4620; fax: 314-516-6420.

E-mail address: bindua@umsl.edu

Journal of Management, Vol. 33 No. 5, October 2007 697-723

DOI: 10.1177/0149206307305561

© 2007 Southern Management Association. All rights reserved.

majority of existing studies in strategic management, however, have focused on profit-seeking firms as atomistic players. Strategy scholars, who rely on economic perspectives underlying resource-based arguments, have established that differences in internal resources contribute to organizational competitive advantage (Barney, 1991). The resource-based perspective has emerged as an important theoretical lens and views firms as a portfolio of resources (Prahalad & Hamel, 1990). Firm-level material resources (finance) and nonmaterial resources (status) are recognized as important resources that affect organizational competitive advantage (Barnett, Greve, & Park, 1994). Beyond internal resources, research also suggests that organizations vary considerably in their network resource endowments that influence their competitive advantage (Gulati, 1999). This has led to recent conceptual arguments that the resource-based view (RBV) is underspecified and provides only a partial account of competitive advantage in interconnected firms because it takes an atomistic approach (Lavie, 2006).

To truly understand the effect of such collaborative relations, we believe it is important to view organizations as embedded in social networks (Granovetter, 1985), which we call collaborative networks. For the purposes of this study, a collaborative network is defined as "a collection of loosely connected or closely knit organizations that share resources," which may help member organizations achieve some strategic objectives.

Indeed, there has been some effort in exploring collaboration networks, though often from different perspectives (Oliver & Ebers, 1998), indicating that the complexity of these organizational phenomena requires simultaneous consideration of multiple facets. Most prominent in the foundational work on collaborations is the body of research that draws on social network theory. Studies in one strain of research in this stream adopt a largely external perspective and reason that participation in collaboration networks benefit organizations because interfirm linkages provide access to partner resources (Gulati, 1995). In terms of specific partner resources, social network studies investigating collaboration outcomes have examined a variety of partner attributes, for example, innovative output (Shan, Walker, & Kogut, 1994), technical capital such as patents (Stuart, 1998), and reputation (Stuart, Hoang, & Hybels, 1999).

A second strain of research in social network theory seeks to understand the specific effects of network structure on organizational performance. Numerous studies in this stream reveal that network structure differentially influences the flow of financial resources, capabilities, and opportunities that become available to the focal actor (Ahuja, 2000; Stuart, 1998). One view underscores the benefits of network position and shows that central actors have greater access to resources (e.g., Ibarra, 1993). The seminal work by Burt (1992), which represents the other view, argues that the ability to bridge structural holes or disconnections among partners because of gaps in the network enhances organizational outcomes.

Social network theory represents an important complementary perspective to consider along with the RBV in terms of organizational competitive advantage, because network structure and partner characteristics can complement internal resources by allowing some organizations differential access to external resources that enhance their capabilities. Consequently, organizations that possess superior network structures are able to enjoy higher benefits compared with organizations that do not possess such network structures. To date, limited studies have investigated the effects of organizational-level characteristics, network relationships, and organizational outcomes (Shiplov, 2006).

Studies in the strategic management literature that draw on the RBV and the social network perspective primarily investigate outcomes in collaboration networks in the for-profit context. These studies mostly investigate how networked organizations gain a competitive advantage from having superior resources and capabilities in comparison to their competitors (Gulati, 1995). Studies of not-for-profit organizations indicate that the simultaneous effects of reduced funding and enhanced community expectations have led to the emergence of collaboration networks in this sector (Alter, 1990). Existing research has yet to empirically evaluate organizational competitive advantage in not-for-profit networked environments.

This study focuses on extending the RBV by integrating social network theory in a not-for-profit collaboration network context. Although not-for-profit organizations do not compete in the traditional sense, they do compete for clients, funds, and government approval (Hardy, Phillips, & Lawrence, 2003). Even if the context is different from a market setting, to prosper, these organizations have to develop capabilities and competencies for services and funding as well. Our study makes an important contribution to the literature by showing how the ownership of resources along with partner resources and structural attributes in the not-for-profit collaboration network context may both contribute to, and impede, organizational competitive advantage.

Although a large and rich body of empirical research emphasizes a variety of normative indicators of formal collaboration (Baum, Calabrese, & Silverman, 2000; Rowley, Greve, Rao, Baum, & Shiplov, 2005), scholars note that studies of nonmonetary outcomes of collaboration are relatively rare (Todeva & Knoke, 2005). To date, no study has examined both the monetary and nonmonetary outcomes that collaboration networks may produce for not-for-profit organizations (Selden, Sowa, & Sandfort, 2006). We jointly examine both monetary outcomes (access to funds) and nonmonetary outcomes (reputation gains, ability to meet client needs, and access to human capital: staff, volunteers, and board members) that accrue to the focal organization in collaboration networks.

The next section summarizes the similarities and differences between not-for-profit and for-profit collaboration networks. Following that, we extend the RBV by integrating the social network theory to explain differential organizational outcomes in a nonprofit collaboration network. Next, the Methods section details our research site and key measurements. Finally, the Results section is followed by a discussion of the implications of this study.

## **Theoretical Framework and Hypotheses**

We focus on outcomes for organizations that participate in not-for-profit collaboration networks. Collaboration networks are increasingly becoming the norm for delivery of publicly funded health and human services. Based on the level of formality, not-for-profit networks are classified as formal (Foster & Meinhard, 2002) and informal (Snavelly & Tracy, 2000). A considerable number of not-for-profit collaboration networks are initiated by the government, which provides significant resources, regulations, and articulates public goals to address complex social and economic problems (Twombly, 2003). Nonprofits that receive government funds are more likely to develop formal collaborative linkages (Guo & Acar, 2005). In not-for-profit collaborations, the overarching rationale to achieve collective goals is stronger than enhancing organizational ends. For-profit collaboration networks are initiated to block

competitors or reduce organizational risk (Van Wijk, Van den Bosch, & Volberda, 2003). Unlike for-profit models of competition that are primarily motivated by the acquisition of monetary inputs, nonprofits that participate in collaboration networks vie with other organizations for nonmonetary factors such as board members, volunteers, and reputation along with economic goals (Brody, 1996).

For-profit and not-for-profit collaboration networks are similar in that they afford greater organizational flexibility and adaptability to change for participants. Just as for-profit collaboration networks enable rapid access to specialized partner resources such as complementary skills, new technologies, or new markets (Gulati, 1998), not-for-profit collaboration networks link partners with discrete services and expertise in local markets enhancing their ability to better meet multiple client needs (Selden et al., 2006).

This study seeks to extend prior research both theoretically and empirically. To do this, we examine a not-for-profit health service delivery network where formal linkages between organizations are required to meet the funding expectations of government agencies. Our emphasis is on extending the RBV by considering the advantages that accrue to the focal organization as a function of its own resource profile, partner attributes, and its network structural attributes. Our unit of analysis is the organization, whereas the level of analysis is the collaboration network. Figure 1 summarizes our general theoretical framework.

### *Resource-Based Theory of Collaboration*

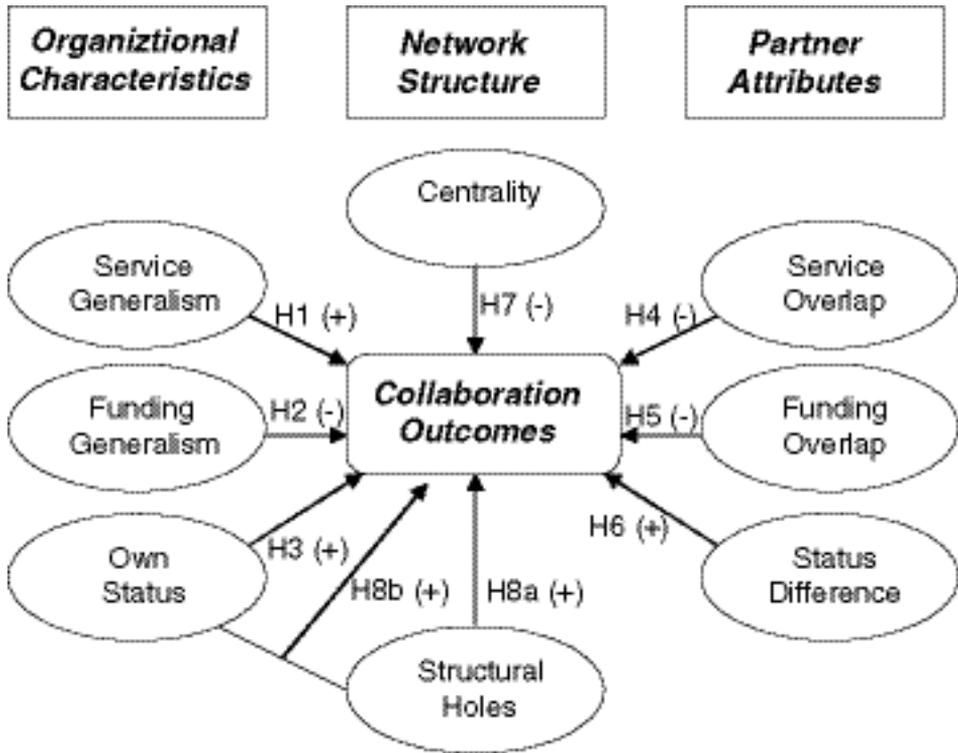
In her seminal work on resource-based theory, Penrose (1959) primarily took an inward-looking approach. Studies that take this traditional approach tend to view organizations as bundles of heterogeneous resources and assume that complete control or ownership of resources is necessary to achieve competitive advantage (Peteraf, 1993; Wernerfelt, 1984). Barney (2001) defined resources as tangible and intangible assets that organizations use to choose and implement strategies. Itami (1987) emphasized that although tangible assets such as financial capital, machines, and buildings are necessary for organizational operations, intangible assets such as organizational culture, human capital, knowledge, reputation, and management skills are the real source of competitive success.

With the intention to extend the RBV, we examine the impact of organizational characteristics, which focus on the internal resources of an organization. Next, we investigate the role of partner resources, which focus on the organization's dyadic relationships with partners. Finally, we investigate the influence of network structures, which represent relational resources, on organization's collaboration outcomes.

### *Impact of Organizational Characteristics on Collaboration Outcomes*

According to the RBV, internal resources can act as competitive weapons that organizations can use against their rivals (Makadok, 1999). Drawing on resource-based reasoning, Succi-Lopez, Lee, and Alexander's (2003) study in the health system context showed that hospitals that control important and distinct resources, namely, higher breadth of services

**Figure 1**  
**Theoretical Framework for Collaboration Outcomes in Not-for-Profit Networks**



and greater bed capacity, enhance their market leadership. Ownership and control of valuable resources by these organizations was shown to enhance their competitive position.

In the same way, scholars underscore that there are substantial differences among not-for-profit organizations, particularly with regard to the services they offer to clients. In their study of linkages between 46 youth service organizations, Wholey and Huonker (1993) introduced a multidimensional organizational attribute, termed *generalism*. Empirical work to date has not investigated the independent effect of generalism on collaboration outcomes. We examine the impact of these organizational characteristics next.

*Service generalism.* Service generalism represents the extent of services provided by the organization (Wholey & Huonker, 1993). Provan, Beyer, and Kruytbosch (1980) noted that although organizations such as the Young Men's Christian Association (YMCA) and Girls Scouts provide relatively limited services to clients, others such as Shelters for the Handicapped provide intensive and comprehensive services to clients. Gronbjerg, Chen, and

Stagner's (1995) investigation of the Illinois child welfare system sought to uncover the link between organizational characteristics and the volume of subcontract dollars awarded to nonprofits. They conjectured that organizations providing a broad range of services to potential clients gain more confidence from funding agencies, which improves their access to funds and is reflected through monetary outcomes. Their findings revealed that there is, in fact, an association between service breadth and organizational ability to attract funds.

Service generalists provide a wide variety of services and have a higher capacity to commit the requisite staff time to assure service quality (Alter, 1990). Greater ability to commit organizational resources motivates them to form productive relations with network partners. Service efficiency because of these interactions should catalyze access to financial resources and increase their flexibility to garner necessary resources to meet client needs by a number of means such as joint grant applications and sharing facilities (Provan & Milward, 2001). Program effectiveness has been shown to promote employee satisfaction, which should improve staff retention in service generalist organizations. Deep interactions with partners also allow service generalists to benefit more by identifying and attracting skilled employees, volunteers, and board members within the network. Based on the preceding discussion, it is argued that the capacity to attract both monetary and nonmonetary resources will be greater for networked nonprofit organizations with a larger number of services.

*Hypothesis 1:* Service generalism of a focal organization will be positively associated with its collaboration outcomes.

*Funding generalism.* Funding generalism denotes that the focal organization has access to a wide variety of funding sources (Wholey & Huonker, 1993). Funding generalism represents a strong core competence because not-for-profit organizations are known to differ in their skills at managing the contingencies associated with different funding sources (Gronbjerg et al., 1995). Organizations characterized by the existence of diverse funding sources are better able to establish funding relationships that become institutionalized over time and contribute to their competitive success.

The government is recognized as an important funding source for not-for-profit organizations (Froelich, 1999). To obtain government funds, organizations must demonstrate a commitment to sharing organizational resources or coordinating with other service providers along with meeting the documentation requirements of government agencies (Snively & Tracy, 2000). Organizations that seek to counteract this pressure from government agencies might increase their reliance on other funding sources and build boundary-spanning collaborations with other grant-making institutions and foundations that do not impose similar restrictions.

Hodge and Piccolo's (2005) study found that privately funded human service organizations are less financially vulnerable than government or commercially funded organizations. Access to a larger number of funding sources provides participant organizations alternative means to secure critical monetary resources. Nonprofits that rely on alternative funding sources have also been shown to strategically recruit business-oriented board members who can provide them with the necessary guidance to position their cause favorably to compete successfully for charitable dollars and other nongovernmental funding sources (Foster & Meinhard, 2002). When hiring professional staff, nongovernmentally funded nonprofits also tend to seek out

people with business-like attitudes and skills (Adams & Perlmutter, 1991). To enhance their visibility, not-for-profit organizations with diverse funding sources are more likely to prioritize marketing, positioning, and image-building activities (Foster & Meinhard, 2002) external to the collaboration network. Greater diversity of funding sources, then, should make it less likely that these organizations will view their network collaboration as facilitating access to critical funding and human capital resources such as staff, volunteers, and board members. Thus,

*Hypothesis 2:* Funding generalism of a focal organization will be negatively associated with its collaboration outcomes.

*Own status.* In the market context, status hierarchy reflects the socially recognized reputation and legitimacy of an organization and is identified as one of the key dimensions for value creation (Li & Berta, 2002). Podolny's (1993) work revealed that other firms use the focal organization's position in the status hierarchy to infer the quality of its products and skills. Empirical studies on for-profit organizations' status draw on legitimacy arguments to examine its market share implications (Podolny, Stuart, & Hannan, 1996), influence on technological innovation (Podolny & Stuart, 1995), and role in new venture performance (Stuart et al., 1999).

Given the relatively low basis for assessing the quality of services in the nonprofit service delivery market, referred to by some as a "classic representation of contract failure" (Gronbjerg et al., 1995), it becomes important to examine status and its competitive implications. Findings from Gronbjerg et al.'s (1995) study revealed that although there is an association between service breadth and organizational ability to obtain financial grants, the association between reputation and ability to attract funds is even stronger. This work shows that similarly to market-oriented networks, organizational status may be an equally valuable asset in the service market.

Galaskiewicz, Bielefeld, and Dowell's (2006) recent study of 156 community-based charitable nonprofits in the Minneapolis-St. Paul metropolitan area showed that status by itself acts as an incentive to entice volunteers and donors to contribute their time and money. Just as high status creates value for stand-alone nonprofits, it could create monetary gains for interconnected nonprofits via two mechanisms. First, as discussed earlier, in making fund allocation decisions, public agencies and grant-making foundations prefer organizations with greater credibility. This suggests that high status can spur access to financial resources outside the network. Second, status ranking represents an important social asset that could influence organizational ability to attract clients from affiliated organizations. New clients could have funds attached to them that are better than the funds of existing clients (e.g., Medicare clients versus Medicaid clients). In this way, monetary resources could also emerge within the network.

Human capital constitutes an important nonmonetary resource for which nonprofits compete with one another (Brody, 1996). Collaboration facilitates social interactions between network members allowing identification of high-quality staff. At the same time, highly ranked focal organizations within the network will be better able to attract skilled professionals. Taken together, acquisition of nonmonetary resources such as staff, volunteers, and board members will be greater than what would be possible without network linkages. Thus, status provides broad visibility that helps mobilize resources.

*Hypothesis 3:* Status of the focal organization will be positively associated with its collaboration outcomes.

### *Impact of Partner Attributes on Collaboration Outcomes*

Taking a complementary approach, scholars studying collaboration contend that resources shared with partner organizations can generate value for the focal organization (Dyer & Singh, 1998). Recent conceptual research that follows this line of reasoning proposes that organizational competitive advantage in a networked context requires consideration of the focal organization's own resources along with partner resource endowments (Lavie, 2006).

Studies in the for-profit context are mixed in their results on whether collaborations with partners with complementary resources yield greater economic payoffs (Hitt, Dacin, Levitas, Arregle & Borza, 2000; Inkpen, 2001). Scholars have tested the complementarity principle to show that firms perform better if they are connected with partners with dissimilar rather than similar resources (Rothaermel, 2001). On the other hand, in an empirical assessment of collaborations in the chemical industry, Saxton (1997) showed that there was a strong relationship between partner strategic similarities and subjective measures of collaboration outcomes. Studies also show that younger and smaller organizations upgrade their nonmonetary resources such as status to a greater extent by affiliating with more established partners (Podolny et al., 1996; Stuart et al., 1999).

It is reasonable to expect that monetary and nonmonetary advantages that accrue to the focal organization in the not-for-profit context should also be a function of the resource profiles of exchange partners. A lack of empirical work that examines the impact of indirect transferability of resources from partners on collaboration outcomes in the not-for-profit network context reveals another gap in the literature; we begin to fill this gap next.

*Service overlap.* This study focuses on a health service delivery network where resource complementarities with partners are particularly beneficial for the focal organization. Provan et al. (1980) noted that human service delivery organizations vary in the comprehensiveness of the services they provide. With regard to service scope, at one end of the continuum, Alter (1990) noted that mental health and other health service-related networks encompass organizations that provide a variety of services because clients have multiple problems that represent diverse needs. At the other end of the spectrum, in adoption networks, organizations usually provide only one type of service.

Wiewel and Hunter's (1985) case study of neighborhood development organizations pinpointed the beneficial outcomes of cooperation between similar organizations. Wholey and Huonker (1993) provided empirical support for the view that similar youth service organizations, when compared with dissimilar ones, have more interorganizational linkages. On the other hand, Aiken and Hage (1968) reasoned that resource dissimilarity governs decisions to establish ties with key resource providers.

Establishing exchange linkages with partners with dissimilar asset profiles should lead to a greater variety of resources that become available to the focal actor. Moreover, affiliation with these partners should expand organizations' access to distinctive market segments,

promoting monetary gains. Organizations that can provide integrated services by collaborating with partners should enhance their ability to gain financial resources from a variety of funding sources. More simply, funding gains from affiliation are likely to be higher where partner organizations have dissimilar resources, as they are able to provide wide-ranging services to their client population.

In their recent study investigating partnerships in early childhood education, Selden et al. (2006) found that interagency collaboration significantly increased voluntary turnover of teachers working in nonprofit organizations. Their findings depict network linkages as career doors for service and professional staff, which increases employee mobility to organizations that provide similar services but better salaries and benefits. Reduction in employee retention should be particularly pronounced for nonprofits that enter into collaboration with partners that provide comparable services. If our central thesis that resource complementarities are critical in health service delivery networks holds, then we expect that the focal organization would underperform monetarily and nonmonetarily relative to other organizations when partner service overlap is high. Formally stated:

*Hypothesis 4:* Service overlap of a focal organization and its partner will be negatively associated with its collaboration outcomes.

*Funding overlap.* For the most part, third-party funding sources pay for the services consumers receive in not-for-profit collaboration networks. Several studies have identified the variety of funding sources that these organizations have come to rely on. Salamon (1999) noted that government funds are increasingly becoming the principal source of funds for health and human service delivery organizations. Others recognize that United Way funds represent an important, though decreasing, source of revenue (Stone, Hager, & Griffin, 2001). Commercial income or funds from fees or service charges and donations from individuals, corporations, foundations, and special events represent other key funding avenues for these organizations.

Although government funds constitute a stable source of revenue (Gronbjerg et al., 1995), government retrenchment policies continue to drive organizational search for alternative funding sources (Salamon, 1999). Funding overlap increases the likelihood that partners serve the needs of similar client groups. This should limit the focal actor's access to distinctive funding sources, constraining financial gains from collaboration. Accordingly, funding overlap or greater funding source similarity should create incentives for partnering organizations to act as resource competitors rather than resource complements. Under these conditions, sharing the same funding sources should fuel competition between organizations for scarce monetary resources.

In the face of dramatic shifts in the funding environment (Froelich, 1999), the emphasis of nonprofit organizations will be more on recruiting staff with marketing and entrepreneurial skills than those more socially focused (Adams & Perlmutter, 1991). The push to acquire these resources from external networks and other sectors (Foster & Meinhard, 2002) is likely to be influenced by the heightened partner competitiveness and the low availability of staff with such skills within the network. At the same time, servicing similar sets of stakeholders can significantly hamper the focal actor's capacity to acquire skilled nonmonetary resources

with these new capabilities via collaborative linkages. On the basis of the above reasoning, we hypothesize the following:

*Hypothesis 5:* Funding overlap of a focal organization and its partner will be negatively associated with its collaboration outcomes.

*Status difference.* Podolny's (1994) investigation of initial public offering deals in the investment banking industry showed that high-status banks avoid interactions with lower status banks. Although linkages within networks of for-profit firms are volitional in character (Stuart, 1998), not-for-profit organizations have comparatively lower discretion in establishing ties (Hall, Clark, Giordano, Johnson, & Van Roekel, 1977). In these networks, high-status organizations may not be able to avoid interactions with those with a lower status.

Stuart's (2000) study in the semiconductor industry and Baum et al.'s (2000) study in the Canadian biotechnology industry showed that interactions with high-status partners can explain evolution of the focal organization's status and valuable technical resources. Exchange relations with high-status partners also indirectly affect perceptions about the focal actor's quality.

Research on day care centers has shown that network ties to high-status actors reduced the chance of death among these organizations (Baum & Oliver, 1992). Status difference between partners should play an equally important role in reputation gains for not-for-profit organizations from collaboration. Asymmetry in partner status should facilitate access to human capital resources such as volunteers and board members for the focal organization, especially for low-status organizations. Moreover, exchange relations are also likely to affect monetary collaboration outcomes as discussed earlier. Because alliance benefits do not have to be symmetric and one partner might benefit differently, we predict the following:

*Hypothesis 6:* Status difference between the focal organization and its partner will be positively associated with its collaboration outcomes.

### *Impact of Network Structures on Collaboration Outcomes*

Studies in the network stream of literature note that emphasis on material resource considerations has led to the neglect of resources that organizations accrue from the collaboration networks in which they are located. Network or structural resources accumulate from the focal organization's past and present network ties and are heterogeneously distributed among organizations because their emergence is viewed as a path-dependent process. Given that network resources are difficult to imitate and they influence organizational ability to channel valuable assets, they can form a significant basis for sustainable competitive advantage (Gulati, 1999).

Studies investigating network resources have found that they have a potential to generate extensive value for interconnected organizations (Powell, Koput, & Smith-Doerr, 1996; Shan et al., 1994). Well-positioned organizations augment their internal resources because occupying superior network positions enhances access to resources, favors, and references (Rowley, Behrens, & Krackhardt, 2000; Walker, Kogut, & Shan, 1997). Our focus is on two

aspects of network structure, namely, positional and structural. Specifically, we investigate how an organization's central position and structural hole locations in the network may constrain and/or facilitate collaboration outcomes, respectively.

*Organizational centrality.* Centrality refers to how central a focal actor's position is relative to others in the network. Although a high centrality allows an organization to enjoy more connections with others in the network, it can also severely limit the organization's ability to seek new opportunities in a changing environment, because of the constraints and inertia of existing relationships, which can demand large amounts of attention and resources (Ibarra, 1993).

Prior research on for-profit collaboration networks reveals the importance of organizational centrality in access to resources (Powell et al., 1996). On the other hand, recent research in the not-for-profit sector suggests that organizational centrality in interorganizational networks may benefit public charitable nonprofits that rely on donations but may be less so for the growth of commercial charitable nonprofits that depend on fees and sales (Galaskiewicz et al., 2006).

The literature on interorganizational networks shows that in many instances, the benefits of network ties may not be offset by the costs of directing resources to establishing, maintaining, and managing linkages (Ebers & Grandori, 1997). Given that a large portion of the income of health service delivery organizations is based on price, quality, and consumer choice, these nonprofits are more likely to emphasize a commercial logic. In light of Galaskiewicz et al.'s (2006) findings that peripherally located commercial nonprofits grow at a faster rate when compared with centrally located commercial nonprofits, we reason that centrality should also detract from the accumulation of monetary resources for networked health service nonprofits.

Despite the fact that a centrally located organization may have some advantage in attracting certain types of information (Galaskiewicz, 1979), it is more likely that central nonprofits will be closely monitored by partners as well as various funding agencies. This can further inhibit the centrally located organization's ability to devote all its resources to serve the needs of its client base. At the same time, it can be expected that peripherally located health service nonprofits will be better positioned than central nonprofits to use resources not diverted to maintaining network relations to seek out other new stakeholders to serve and identify nonmonetary resources. Thus, we propose that centrally located nonprofits may not be in the best position to acquire monetary and nonmonetary resources in a collaborative network. Therefore, we hypothesize the following:

*Hypothesis 7:* Greater centrality of the focal organization in the network will be negatively associated with its collaboration outcomes.

*Structural holes.* Scholars argue that beyond dyadic relations, network structure can affect a variety of outcomes. One stream of network literature is based on the structuralist view championed by Burt (1992). Here the notion is that the pattern or configuration of interconnections influences the resources that flow through these ties. This view proposes that organizations that occupy brokerage positions can better exploit gaps in the network and have greater monetary gains attributable to the greater access to nonredundant resources. Walker

et al.'s (1997) work was among the first to direct attention to the importance of investigating the role of structural holes.

Scholars recognize that improving community health and delivery of human services goes beyond the capabilities of any single organization (Selden et al., 2006). Some not-for-profit organizations demonstrate a wider conception of their environment, think more broadly about their mission, and collaborate with a variety of organizations (schools, youth centers, city and health organizations) outside their direct service area (Brown & Iverson, 2004). These network participants constantly identify initiatives to expand their delivery opportunities compared with others. As a result, an open network with several structural holes is created because the focal organizations' partners are not linked to one another.

Generally, not-for-profit organizations that provide a narrow range of services (e.g., shelters) collaborate with others that provide similar services. This suggests that in the not-for-profit context, distinct collaboration networks cater to different clients. In health service delivery networks, the ability to provide expansive services is very important for the well-being of clients. We propose that brokerage will make it easier to bridge complementary unconnected resources.

Prior research indicates that nonprofits with a greater ability to increase their service scope programmatically and geographically receive larger allocations from the government (Rosenthal, 1996). Snively and Tracy (2000) found that operational costs increase significantly in organizations that attempt to aid clients in receiving comprehensive services without seeking out collaborations. Organizations that satisfy multiple client needs should not only improve their monetary collaboration outcomes but also reduce operational costs. Consequently, efficiency at solving complex client problems by integrating and coordinating services with other organizations in a coherent manner should facilitate the level of monetary resources that are channeled to organizations positioned to bridge structural holes by external funding agencies.

Given the proliferation of distinct not-for-profit collaboration networks, organizations that span structural holes will be able to connect with others in different market niches that typically employ staff with a variety of skills. Structural holes are important resources by themselves that interconnected organizations should be able to leverage to press for a higher share of nonmonetary resources. Indeed, establishing diverse contacts within and beyond the network boundary by spanning structural holes should diminish the difficulty of securing skilled human resources. Hence, bridging structural holes should facilitate access to both monetary and nonmonetary resources.

*Hypothesis 8a:* Structural holes bridged by the focal organization will be positively associated with its collaboration outcomes.

*Structural holes and own status.* While bridging structural holes can provide potential competitive advantage to an organization, it may also be important to consider its boundary conditions. As Burt (1992) pointed out, the actual benefit of structural holes may depend on the characteristics of the actor. In a not-for-profit setting, status becomes an important characteristic of an organization. We argue that the advantages of bridging structural holes may

be more significant to a high-status organization than to a low-status organization. First, high-status organizations tend to have better reputations for solving complex client problems by integrating and coordinating services with other organizations in a coherent manner (Provan & Milward, 1995). That advantage should allow these organizations to be better at leveraging their structural holes and benefit more from their bridging positions. Second, because of their high credibility in the network, high-status organizations can develop strong interorganizational trust with their partners and enhance program effectiveness by bridging structural holes. Hence, we hypothesize the following:

*Hypothesis 8b:* High-status focal organizations will benefit more from structural hole positions in terms of collaboration outcomes.

## **Research Method**

### *Research Setting*

Because the level of analysis of our study is the network, at the outset of the study, background research was conducted in the Dallas metropolitan statistical area to identify a suitable site to study collaboration outcomes in a not-for-profit network context. Background assessment involved semistructured interviews with key administrators at organizations that represented diverse industries such as youth development, arts and culture, and health and human services. These interviews revealed that organizations providing HIV/AIDS-related services form networks. In addition, results of the exploratory fieldwork also suggested that stakeholders that are part of the AIDS “continuum of care” were the most involved in collaborative relationships. Because the goal of this study is to identify strategic resource transfer via network linkages, the HIV/AIDS service delivery network in Dallas, Texas, was selected as a suitable research site.

### *Network Data Collection*

Having identified that the network of organizations that provide services to HIV/AIDS clients was an appropriate research site, we needed to define the appropriate boundary around the network. We followed Provan and Milward’s (1995) positional approach and only included organizations if they were involved with our target population. Besides organizations that have care of HIV/AIDS clients as their main mission, other organizations that provide permanent and temporary housing and shelter; food; clothing; transportation; medical and dental care; legal, emergency, and nonemergency assistance; and drug and alcohol abuse care also provide services to these clients. To construct the network of service delivery to clients with HIV/AIDS, we used a combination of sociometric and egocentric techniques (Wasserman & Faust, 1994).

The sociometric technique was implemented as follows. The network was constructed by creating a roster of all organizations providing either primary or second-tier services to HIV/AIDS clients listed in the regional directory prepared by the Resource Center of Dallas.

To cross-check names of key second-tier organizations, archival grant bids (publicly available at the Dallas County Health and Human Services) for all the federally funded organizations were manually examined to identify key collaboration partners for the years 2002-2003, 2003-2004, and 2004-2005. Based on this sampling technique, 73 potential network members were identified.

To prevent names of important organizations being missed, we pilot tested our network questions. Pilot study participants recommended the addition of 3 other organizations. They also identified 11 organizations on our roster that had gone out of business in 2004. Three other organizations that did not meet the criteria for inclusion, as their level of involvement with our target population was minimal, were excluded from the list, bringing the total number of network participants to 62.

### *Survey Instrument*

A survey instrument that also contained network-related questions was our main data collection tool. The measurement items in the questionnaire were designed after a careful examination of the information gathered during the background research and a thorough review of the network, collaboration, and alliance literature. Several business school and public policy faculty members who acted as expert judges helped assess the face validity of the survey. Based on their input, items in the survey instrument were edited and further refined. To identify problems in question wording, clarity, or order, the survey was pilot tested on the executive directors of 3 of the 16 organizations that were part of the background research. These participants had several useful suggestions that helped in the development of the final version of our questionnaire. The survey was administered in person to all the network participants for two reasons. One purpose was to clearly explain questions involving network-related data to ensure that respondents were interpreting them as we intended. Second, we believed that this technique would greatly expedite the data collection process while providing key respondents an opportunity to air their views on the functioning of the HIV/AIDS service delivery network.

### *Respondents*

The survey was administered to 58 of the 62 organizations in the network. We were unable to contact 3 of the organizations, and 1 organization declined to participate as administrators felt that during the past few years, they had not worked with the target population. Of the 58 responding organizations, 52 were not-for-profit organizations, 4 were government entities, and 2 were for-profit firms. Because the purpose of this study was to examine collaboration outcomes in not-for-profit networked organizations, our data set consisted of 52 nonprofits organized as a network. We adopted an intense data collection process that spanned 3 months (March 2005 to May 2005). This technique enabled us to obtain a high response rate of 98%, with missing data for only a few organizations. Follow-up phone calls helped to fill in incomplete data so that the final data set has very limited missing information for only one organization.

Because prior research suggests that collecting organizational-level data from questionnaires has potential weaknesses, wherever possible, we collected secondary data to ensure reliability. Archival data on annual expenses, revenues, and funding sources was collected from the Dallas County records for federally funded organizations and from the National Center for Charitable Statistics for other organizations. The mean age of organizations in our network was 25 years. Organizations had been providing HIV/AIDS services for an average of 13 years. The average number of employees was 37, and the average number of volunteers was 254. The average income and the average expenditure for the years from 2002 to 2004 were \$3,319,448 and \$3,816,542, respectively.

Only one survey was administered and completed per organization; however, to improve reliability of the network data, several respondents per organization were asked to participate in the survey. The mean number of participants per organization was 2, whereas the total number of participants per organization ranged from 1 to 5. When more than 1 participant was involved in survey completion, the response was a joint effort of representatives from the same organization such that questions were completed by the executive director after discussing and resolving any discrepancies with the other respondents. Typically, the network question that involved identification of collaboration partners was completed in consultation with social workers or clinical directors present who are more knowledgeable about these linkages.

### *Data Set*

The data set was constructed from the information collected on collaborative relationships between all the 52 not-for-profit service delivery organizations who participated in this network study. Although nonprofit networked organizations might demonstrate a variety of linkages, we interpreted collaborative relations as administrative ties. We took this approach because prior research suggests that by examining administrative collaborations, we would be better able to delve into the impact of network coordination on organizational outcomes.

Each data point was the nondirectional linkage between collaborating organizations such that it included both  $ij$  and  $ji$ . We considered two possible situations: when organization  $i$  was the focal actor and its partner was  $j$  and when  $j$  was the focal organization and  $i$  was its partner. Both conditions were relevant for this study because we sought to examine how organizational characteristics, partner attributes, and network structure influence collaboration outcomes for the focal organization.

Our data set consisted of a total of 316 administrative linkages between the 52 not-for-profit organizations in the network during the time period 2004-2005. These collaborations did not include any organizations outside the network. Eighty-seven percent of the organizations were formally linked with others within the network such that there were a total of 158 dyadic linkages. All the organizations in our sample participated in the study despite the fact that a small percentage of them were not formally linked with others in the network. It was important to include these organizations because our background research indicated that organizations in our study exchanged significant resources with them, and in the majority of these cases, they were in the process of formalizing these linkages. The 2 organizations with the highest number of formal linkages each collaborated with 26 other network organizations.

Our data also showed that whereas 47% of network members were linked formally with 6 or more organizations, only 20% were linked with 10 or more network participants.

### *Measurement of Dependent Variable*

The key dependent variable to test each of our hypotheses represented the strategic benefits that accrue to the focal organization from collaboration. One composite measure for collaboration outcomes that included both monetary outcomes, namely, funding gains, and nonmonetary outcomes, which included gains in reputation, human capital, and ability to meet client needs, was created to test Hypotheses 1 through 8. Items for the dependent variable were identified and developed on the basis of background interviews with three HIV/AIDS service providers and three technical consultants who work with not-for-profits.

This construct was measured using a 5-point Likert-type scale that is considered easy for respondents to master. The ratings were such that 1 = *small extent* and 5 = *great extent*. To operationalize the collaboration outcomes dependent variable, respondents were asked to rate eight separate items. Items measured whether collaboration enhanced monetary and nonmonetary outcomes for the organization. The appendix lists all survey items for the dependent variable. Values for each item ranged from 1 to 5. To create the single composite measure for the collaboration outcomes construct, responses to each of the above-mentioned eight items were aggregated such that the value for collaboration outcomes ranged from 8 to 40. Cronbach's alpha coefficient for this eight-item scale was .83.

### *Measurement of Independent Variables*

The organizational-characteristics variables are (a) generalism and (b) own status.

*Generalism.* To operationalize the internal resource constructs, we created two measures for generalism: service generalism and funding generalism. Service generalism was obtained from self-reports of executive directors of all organizations in the network using the approach used by Wholey and Huonker (1993). The survey instrument asked respondents to "please check all the services provided by your organization." Respondents could choose from a total of 29 services. This measure was constructed by manually counting the total number of services mentioned by the organization. Values ranged from 19 (*most generalized provider of services*) to 1 (*least generalized provider of services*). Funding generalism was similarly constructed using director responses to a question that asked them, "Please indicate the amount of funds that came from the following funding sources." Respondents could identify whether their funds came from any of the following six categories: contributions (individual, organization, or foundation), United Way, government, private sale of goods/commercial income, special events, or other sources (interest income or membership fees). Values ranged from 6 (*most generalized: all six funding sources*) to 1 (*least generalized: only one funding source*).

*Own status.* The organizational status construct was operationalized by asking executive directors of each agency the following question: "Please identify the 10 most influential organizations in the HIV/AIDS delivery system." This item was adapted from Provan and Milward's (1995) study of mental health networks. We used the responses to create a continuous measure for the focal organization's own status. We manually counted the number of times the focal organization was mentioned by other network members. The total number of mentions was used to create the own status construct for each organization in the network.

The partner attribute variables are (a) service and funding overlap and (b) status difference.

*Service and funding overlap.* Here again two measures for overlap were created: service overlap and funding overlap, using the approach used by Wholey and Huonker (1993). Service overlap, a dyad-based variable, was constructed by counting the common services between the focal organization and its partner and dividing it by the total number of services offered by the focal organization. For example, to create service overlap between Organization A and Organization B, we counted A's common services with Partner B and divided this by the total number of services offered by A. Service overlap between B and A had a different value because we counted B's common services with Partner A and divided this by the total number of services offered by B. Funding overlap, another dyad-based variable, was constructed in a similar fashion.

*Status difference.* To assess status difference between the focal actor and its partners, we used the raw score of the total number of mentions for the focal organization (as described in the section above) and subtracted that from the partner's raw score. For example, if the focal organization was mentioned 51 times and the partner mentioned 42 times, the status difference score for the focal organization was calculated as 51 minus 42, which is 9. On the other hand, if the focal organization was mentioned 5 times and the partner mentioned 15 times, the status difference score for the focal organization was calculated as 5 minus 15, which is -10. Thus, we took the sign of the difference into account and did not use the absolute value.

The network structure variables are (a) structural holes and (b) organizational centrality.

We obtained data on administrative linkages that represent formal agreements between organizations to collaborate (also called *memorandums of understanding*). To construct the adjacency matrix for collaborative network linkages, executive directors of all not-for-profit organizations in the network answered the following question: "Please identify all the organizations, during the past 2 years with which your organization has established formal administrative linkages specifically related to HIV/AIDS clients?" This approach allowed construction of asymmetric network data, such that one organization may say that it has formal collaborative ties with the other, but the other may not necessarily do the same. Linkages were dichotomously coded (1 if the organization had a formal contract with the other organization, 0 otherwise). Although the administrative matrix should be symmetric by nature, some executive directors may not recall all linkages (Provan, Veazie, Staten, & Teufel-Shone, 2005). Because of their boundary-spanning role, social workers or clinical directors who are typically more knowledgeable about linkages were contacted to check asymmetric linkages (Provan & Milward, 1995). Follow-up calls allowed us to confirm linkages for most participants. Provan et al. (2005) suggested that one way of addressing this problem is to use

the response of other organizations in the network. Because we had only a few unconfirmed linkages, we took this approach to manually create the symmetric network.

*Structural holes.* The symmetric administrative network matrix was analyzed using UCINET V (Borgatti, Everett, & Freeman, 1999) network analysis software to compute the constraint measure. The constraint score measures an organization's lack of access to structural holes (Burt, 1992). We use Burt's (1992) constraint formula to compute structural holes in the organization's ego network:

$$P_{ij} + \sum_q P_{iq} P_{qj},$$

where  $p_{ij}$  is the strength of direct ties from  $i$  to  $j$ , and the second part of the equation is the sum of the indirect tie strength from  $i$  to  $j$  via all  $q$  ( $q$  is not equal to  $i$  and  $j$ ). The higher the organization's constraint score, the more difficult it is for the focal actor to avoid the demands of the other organization. To construct the structural holes measure, we followed Zaheer and Bell's (2005) approach and subtracted the constraint score from 1 as the constraint score measures an organization's lack of access to structural holes (Burt, 1992).

*Organizational centrality.* The symmetric administrative network matrix was analyzed using UCINET V (Borgatti et al., 1999) network analysis software to compute the degree centrality measure. We felt it was appropriate to use degree centrality because it best reflects the extent of direct links of the focal organization in the network. Organizations with a high-degree centrality have a greater number of direct ties with organizations in the network.

### *Control Variables*

Several variables were used to control for other factors that could influence strategic outcomes in service delivery organizations. We included a control for the number of counties served by an organization, as it could independently influence its ability to acquire resources (location). Organizational age could also influence collaboration outcomes. To operationalize this construct, we followed prior research and took the number of years elapsed since the founding of the organization (age).

Because institutional connections should facilitate organizational ability to attract resources, we computed two control measures. To avoid introducing any bias between these control variables and items used to measure our dependent variable, we created dichotomous instead of continuous measures. The first variable was created such that government support was 1 when the organization received government funding and 0 when it did not. Research by Hager, Galaskiewicz, and Larson (2004) suggests that reliance on volunteers reduces organizational failure. Volunteer presence could bolster collaboration outcomes, so volunteer support is 1 if two thirds of personnel were volunteers; otherwise, it is 0.

Organizations have different missions, and service specialization may influence incentives to collaborate, which may shape collaboration outcomes. We created three categorical variables on the basis of the organization's main mission. If the key mission of the organization was identified as service of substance and alcohol abuse clients, then Service Dummy 1 = 1, otherwise is 0. If the organization provides primary health care then Service Dummy

2 = 1, otherwise is 0. Finally, if the primary target population of the organization was children and families, then Service Dummy 3 = 1, otherwise is 0. The default category included organizations that care for HIV/AIDS clients. Finally, an organization's board of directors represents another possible source of strategic effects. Our survey included a question to identify whether board members contributed to resource gains. When boards contribute resources, Board dummy = 1, otherwise Board dummy = 0.

## Results

We analyzed our data using ordinary least squares regression (OLS). We built three models to examine the independent and interaction effects of our variables on collaboration outcomes. Model 1 was our baseline model. In this, we modeled collaboration outcomes as a function of our control variables. The dependent variable for Models 1, 2, and 3 were collaboration outcomes. Model 2 included all our independent variables. Model 3 included the interaction term. Table 1 reports the descriptive statistics and correlation between our variables. Table 2 shows the regression results for all the models.

To check for multicollinearity, we used the variation inflation factor (VIF), a commonly used collinearity diagnostic technique. A general rule is that the VIF should not exceed 10 (Belsey, Kuh, & Welsch, 1980). VIF values for all our variables in Model 2 were below 10.

Model 2 presents our integrated model that shows the regression results for the effects of organizational characteristics, partner attributes, and network structures on monetary and non-monetary collaboration outcomes. To test Hypothesis 1 with regard to the effect of service generalism on collaboration outcomes, the model shows that service generalism has a significantly positive impact on the dependant variable—collaboration outcomes. This corroborates resource-based arguments that organizational characteristics such as service breadth allow service generalists to acquire resources, therefore supporting Hypothesis 1. While examining Hypothesis 2, however, funding generalism was not found to be an important deterrent of outcomes. This may suggest that when operating in networks, collaboration outcomes are driven by other resources regardless of the extent of the focal organization's funding sources. Therefore, Hypothesis 2 is not supported. With regard to the role of organizational status, Model 2 suggests that status is important for collaboration outcomes. This finding shows that high-status nonprofit organizations that engage in collaborative relationships are able to attract monetary and nonmonetary resources. This evidence supports Hypothesis 3.

With regard to our conjecture in Hypothesis 4 that greater service overlap negatively affects collaboration outcomes, Model 2 has not yielded statistically significant evidence and thus failed to support the hypothesis. Model 2, however, has shown that the level of funding overlap between the focal actor and its partner negatively affects collaboration outcomes, which supports Hypothesis 5. This underscores the fact that as funding source similarity between interconnected nonprofit organizations increases, they begin to view each other as resource competitors, which limits their resource gains from collaboration. As for Hypothesis 6 about the impact of status difference between partners, Model 2 shows that status difference is not significant, and the direction is opposite (negatively related) to what we predicted (positively related). This evidence does not support Hypothesis 6. One possible explanation for this outcome could lie in the way we create the status difference construct. We did not use the absolute value of status difference. Thus, as status difference increases or when the sign is positive, the

**Table 1**  
**Descriptive Statistics and Correlations**

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6	7	8	9	10	11	12
1. Age	25.0	23.0												
2. Location	16.0	40.0	.04											
3. Service generalism	9.0	5.0	.08	.34*										
4. Service overlap	0.4	0.3	.06	-.03	.06									
5. Fund generalism	3.0	1.0	.32*	.15*	.39*	.05								
6. Funding overlap	0.7	0.3	-.18*	-.08	-.13*	.21*	-.41*							
7. Own status	14.0	14.0	-.13	-.02*	.21*	-.13	.29*	-.08						
8. Status difference	0.1	21.0	-.07	.02	.17*	-.04	.21*	-.20*	.75*					
9. Centrality	23.1	15.1	-.20*	-.02	.004	-.13	.06	.04	.86*	.68*				
10. Structural holes	0.8	0.1	-.09	.04	-.05	-.07	.07	.01	.47*	.38*	.66*			
11. Government support	0.9	0.2	.06	-.06	.11	.07	.13	.16*	.18*	.20*	.21*	.16*		
12. Volunteer support	0.8	0.4	.08	-.38*	-.26*	.07	.09	-.03	.35*	.20*	.29*	.16*	.13*	
13. Outcomes	19.0	8.0	-.01	-.16*	.39*	-.01	.31*	-.17*	.37*	.23*	.14	.04	.14	.23*

Note: *N* = 316.

\**p* < .01.

**Table 2**  
**Hierarchical Regression Analysis on Collaboration Outcomes<sup>a</sup>**

Variable	Model 1	Model 2	Model 3
Control variables			
Age	-.00 (-0.00)	-.14 (-2.50)*	-.13 (-2.43)*
Counties located	-.13 (-1.80) <sup>†</sup>	-.20 (-3.28)**	-.18 (-3.09)**
Volunteer support	.09 (1.16)	.20 (2.91)**	.22 (3.17)**
Government support	.04 (0.54)	.07 (1.19)	.06 (1.14)
Organizational characteristics variables			
Service generalism		.39 (6.38)***	.39 (6.45)***
Fund generalism		.01 (0.21)	-.02 (-0.32)
Own status		.61 (4.92)***	.41 (2.70)**
Partner attribute variables			
Service overlap		.02 (0.45)	.02 (0.51)
Funding overlap		-.12 (-2.20)*	-.11 (-2.04)*
Status difference		-.10 (-1.41)	-.11 (-1.49)
Network structure variables			
Centrality		-.36 (-2.76)**	
Structural holes			
Network structure and organizational characteristics			
Structural Holes × Own Status		.04 (0.67)	-.52 (-3.6)***
			-.19 (-1.61)
			.52 (2.41)*
<i>N</i>	316	316	316
<i>p</i>	.00	.00	.00
Adjusted <i>R</i> <sup>2</sup>	.07	.38	.40

Note: Three service and one board dummy variables were included, but not shown in the models. Dependent variable for Models 1, 2, and 3 is collaboration outcomes.

a. Standardized coefficients are reported with *t* statistics in parentheses.

<sup>†</sup>*p* < .1.

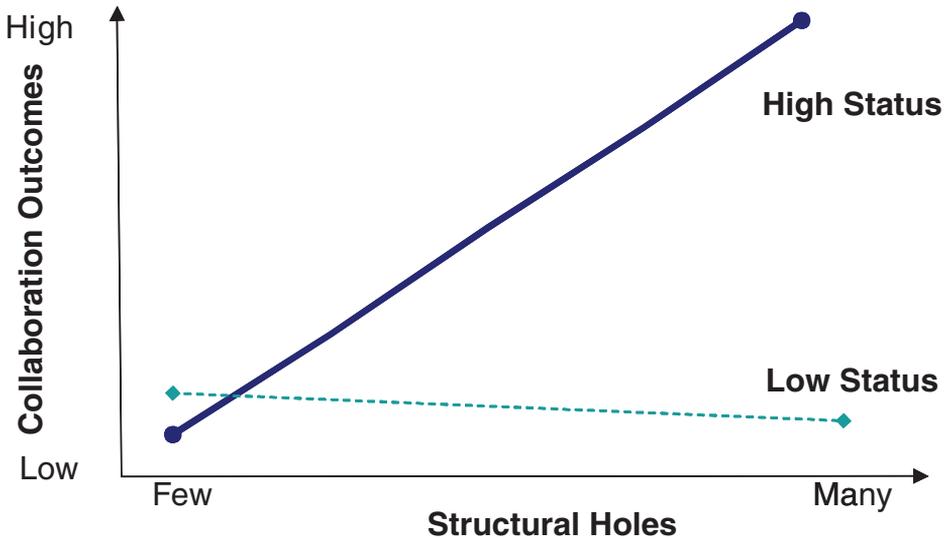
\**p* < .05.

\*\**p* < .01.

focal organization has a higher status, making it unlikely that it will view its collaborations with low-status partners as facilitating access to critical resources.

In Hypothesis 7, we proposed the negative effect of an organization's centrality on its collaboration outcomes. The significant coefficient for Hypothesis 7 supports our arguments and shows that organizational centrality poses constraints for not-for-profit networked organizations. In Hypothesis 8a, we suggested that the ability to bridge structural holes will be positively related to collaboration outcomes. The coefficient for the *Structural Holes* variable, however, is not significant in Model 2. This evidence does not lend support to Hypothesis 8a. When we examined the interaction between structural holes and own status as proposed in Hypothesis 8b, we found that it is significant, which indicates that there is indeed a boundary condition benefiting higher status organizations that occupy structural holes. This is further illustrated by the interaction plot (Figure 2).

**Figure 2**  
**Interaction Effects of Structural Holes and Status on Collaboration Outcomes**



## Discussion

This study extends the RBV to a network of not-for-profit organizations by investigating the roles of organizational characteristics, partner attributes, and network structures on organizational ability to acquire monetary and nonmonetary resources through collaborations. Our study is unique from most studies in the mainstream strategic management field in that it views organizations not as atomistic profit-seeking firms but as resource-sharing entities that are embedded in complex network relations. As predicted, not-for-profit organizations that provide a broad range of services enhance their effectiveness from collaboration in terms of resource gains. Our empirical analyses did not support our conjecture regarding fund generalism. One possible explanation for this might be that these organizations do not particularly view benefits from affiliation because of their own ability to tap into a variety of funding sources. Contrary to conceptual work in this field that suggests that larger, more visible organization may get less out of network involvement (Podolny, 1994), our data indicate that high-status organizations are able to derive critical resources from network involvement. Overall, these results confirm our conjecture that collaboration outcomes are affected by different resource-based characteristics (service breadth and status) in cooperative not-for-profit networks.

Although our findings do not support the argument that collaboration outcomes decrease with partner similarity in terms of services provided, we did find support for the negative influence of funding source similarity on collaboration outcomes. Lack of support for the

negative effect of partner service similarity argument can be explained by the fact that at least some decisions about coordination between organizations may rest with external funders.

This study highlights the importance of network attributes such as centrality and structural holes in a cooperative network. Our data show that centrality in collaboration networks may be detrimental for organizational outcomes. As indicated in the Results section, our findings simultaneously support and question Walker et al.'s (1997) conjecture that structural hole theory may not apply to cooperative networks. Our study shows that structural holes benefit high-status organizations, which presents an important boundary condition for collaboration outcomes from network structural holes. This evidence makes an important contribution to research that underscores taking an integrative approach in examining outcomes (Zaheer & Bell, 2005).

This analysis has important implications for normative theorizing. The majority of existing studies that draw on the RBV in the strategic management literature investigate collaboration outcomes in network contexts that are competitive in nature. By applying the RBV to a collaborative context as opposed to a competitive context, this study reveals that internal and external resources allow some organizations to enhance their capabilities by collaborating with others; as a consequence, they enjoy higher monetary and nonmonetary benefits compared with others that cannot advance their capabilities with collaboration.

Although our study has advanced understanding of the impact of a variety of factors on collaboration outcomes, it has its limitations. First, although we collected objective measures for several variables, our dependent variables used subjective indicators for monetary outcomes (e.g., funding gains). Future research should continue to probe whether objective collaboration outcomes are similarly affected by organizational, partner, and network resources. Second, although our research was concerned with organizational outcomes, other scholars emphasize that collaboration outcomes must be evaluated at the network and community levels (Provan & Milward, 2001). The network and community levels are more concerned with whether individual clients' needs are served well by participant organizations. Future research can also examine how network-level shifts in funding and service priorities affect collaboration outcomes for the focal organization.

In conclusion, our study provides much needed empirical insights into the development of resources by interconnected not-for-profit organizations. Although resource-based and social network perspectives are often treated separately in the mainstream alliance literature, we show that they need to be integrated because the RBV view by itself cannot explain how organizations derive a competitive advantage in networked environments.

## APPENDIX

### Description of Dependent Variable: Questionnaire and Reliability

Variable	Questions in Surveys	Cronbach's Alpha
Dependent variable	(On a Likert-type scale of 1	
Collaboration outcomes	[ <i>small extent</i> ] to 5 [ <i>great extent</i> ])	
	Your organization has enhanced its ability to obtain funding	0.83

(continued)

**APPENDIX A (Continued)**

Variable	Questions in Surveys	Cronbach's Alpha
	by collaborating in the network.	
	The extent to which collaborations have led to a change in your organizational revenue sources.	
	Your organization has enhanced its ability to recruit board members by collaborating in the network.	
	Your organization has enhanced its ability to recruit employees by collaborating in the network.	
	Your organization has enhanced its ability to recruit volunteers by collaborating in the network.	
	Your organization has enhanced its ability to retain employees by collaborating in the network.	
	Your organization has enhanced its reputation by collaborating in the network.	
	Your organization has enhanced its ability to meet client needs by collaborating in the network.	

## References

- Adams, C., & Perlmutter, F. 1991. Commercial venturing and the transformation of America's voluntary social welfare agencies. *Nonprofit and Voluntary Sector Quarterly*, 20(1): 25-38.
- Ahuja, G. 2000. Collaboration networks, structural holes, and innovation: A longitudinal study. *Administrative Science Quarterly*, 45: 425-455.
- Aiken, M., & Hage, J. 1968. Organizational interdependence and intraorganizational structure. *American Sociological Review*, 33: 912-933.
- Alter, C. 1990. An exploratory study of conflict and coordination in interorganizational service delivery systems. *Academy of Management Journal*, 33(3): 478-502.
- Barnett, W. P., Greve, H. R., & Park, D. Y. 1994. An evolutionary model of organizational performance. *Strategic Management Journal*, 15: 11-28.
- Barney, J. B. 1991. Firm resources and sustained competitive advantage. *Journal of Management*, 17: 99-120.
- Barney, J. B. 2001. Is the resource-based view a useful perspective for strategic management research? Yes. *Academy of Management Review*, 26(1): 41-57.
- Baum, J. A. C., Calabrese, T., & Silverman, B. 2000. Don't go it alone: Alliance network composition and startups' performance in Canadian biotechnology. *Strategic Management Journal*, 21: 267-294.
- Baum, J. A. C., & Oliver, C. 1992. Institutional embeddedness and the dynamics of organizational behavior. *American Sociological Review*, 57(3): 540-559.

- Belsey, D. A., Kuh, E., & Welsch, R. E. 1980. *Regression diagnostics: Identifying influential data and sources of collinearity*. New York: John Wiley.
- Borgatti, S. P., Everett, M. G., & Freeman, L. C. 1999. *UCINET 5.0 Version 1.00*. Natick, MA: Analytic Technologies.
- Brody, E. 1996. Agents without principals: The economic convergence of the nonprofit and for-profit organizational forms. *New York Law School Law Review*, 40(3): 457-536.
- Brown, W. A., & Iverson, J. O. 2004. Exploring strategy and board structure in nonprofit organizations. *Nonprofit and Voluntary Sector Quarterly*, 33(3): 377-400.
- Burt, R. S. 1992. *Structural holes: The social structure of competition*. Cambridge, MA: Harvard University Press.
- Dyer, J. H., & Singh, H. 1998. The relational view: Cooperative strategy and source of interorganizational competitive advantage. *Academy of Management Review*, 23(4): 660-679.
- Ebers, M., & Grandori, A. 1997. *The formation of inter-organizational networks*. New York: Oxford University Press.
- Foster, M. K., & Meinhard, A. G. 2002. A contingency view of the responses of voluntary social service organizations in Ontario to government cutbacks. *Canadian Journal of Administrative Sciences*, 19(1): 27-41.
- Froelich, K. A. 1999. Diversification of revenue strategies: Evolving resource dependence in nonprofit organizations. *Nonprofit and Voluntary Sector Quarterly*, 28(3): 246-268.
- Galaskiewicz, J. 1979. The structure of community networks. *Social Networks*, 57(4): 1346-1364.
- Galaskiewicz, J., Bielefeld, W., & Dowell, M. 2006. Networks and organizational growth: A study of community based nonprofits. *Administrative Science Quarterly*, 51: 337-380.
- Granovetter, M. 1985. Economic action and social structure: The problem of embeddedness. *American Journal of Sociology*, 91: 481-580.
- Gronbjerg, K. A., Chen, T. H., & Stagner, M. W. 1995. Child welfare contracting: Market forces and leverage. *Social Service Review*, 69(4): 583-613.
- Gulati, R. 1995. Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal*, 38(1): 85-113.
- Gulati, R. 1998. Alliances and networks. *Strategic Management Journal*, 19(4): 293-318.
- Gulati, R. 1999. Network location and learning: The influence of network resources and firm capabilities on alliance formation. *Strategic Management Journal*, 20: 397-420.
- Guo, C., & Acar, M. 2005. Understanding collaboration among nonprofit organizations: Combining resource dependency, institutional, and network perspectives. *Nonprofit and Voluntary Sector Quarterly*, 34: 340-361.
- Hager, M. A., Galaskiewicz, J., & Larson, J. A. 2004. Structural embeddedness and the liability of newness among nonprofit organizations. *Public Management Review*, 6(2): 159-188.
- Hall, R. H., Clark, J. P., Giordano, P. C., Johnson, P. V., & Van Roekel, M. 1977. Patterns of interorganizational relationships. *Administrative Science Quarterly*, 22: 457-474.
- Hardy, C., Phillips, N., & Lawrence, T. B. 2003. Resources, knowledge and influence: The organizational effects of interorganizational collaboration. *Journal of Management Studies*, 40(2): 321-347.
- Hitt, M. A., Dacin, M. T., Levitas, E., Arregle, J., & Borza, A. 2000. Partner selection in emerging and developed market contexts: Resource-based and organizational learning perspectives. *Academy of Management Journal*, 43: 449-467.
- Hodge, M. H., & Piccolo, R. F. 2005. Funding source, board involvement techniques, and financial vulnerability in nonprofit organizations: A test of resource dependence. *Nonprofit Management and Leadership*, 16(2): 171-190.
- Ibarra, H. 1993. Network centrality, power and innovation involvement: Determinants of technical and administrative roles. *Academy of Management Journal*, 36(3): 471-502.
- Inkpen, A. C. 2001. Strategic alliances. In M. A. Hitt, R. E. Freeman, & J. S. Harrison (Eds.), *The Blackwell handbook of strategic management*: 409-433. Malden, MA: Blackwell.
- Itami, H. 1987. *Mobilizing invisible assets*. Cambridge, MA: Harvard University Press.
- Lavie, D. 2006. The competitive advantage of interconnected firms: An extension of the resource-based view. *Academy of Management Review*, 31(3): 638-658.
- Li, S. X., & Berta, W. B. 2002. The ties that bind: Strategic actions and status structure in the US investment banking industry. *Organization Studies*, 23(3): 339-368.
- Makadok, R. 1999. Interfirm differences in scale economies and the evolution of market shares. *Strategic Management Journal*, 19: 683-696.

- Oliver, A. L., & Ebers, M. 1998. Networking network studies: An analysis of conceptual configurations in the study of inter-organizational relationships. *Organization Studies*, 19: 549-583.
- Penrose, E. T. 1959. *The theory of the growth of the firm*. New York: John Wiley.
- Peteraf, M. A. 1993. The cornerstones of competitive advantage: A resource-based view. *Strategic Management Journal*, 14: 179-191.
- Podolny, J. M. 1993. A status-based model of market competition. *American Journal of Sociology*, 98: 829-872.
- Podolny, J. M. 1994. Market uncertainty and the social character of economic exchange. *Administrative Science Quarterly*, 39: 458-483.
- Podolny, J. M., & Stuart, T. E. 1995. A role-based ecology of technological change. *American Journal of Sociology*, 100(5): 1224-1260.
- Podolny, J. M., Stuart, T. E., & Hannan, M. T. 1996. Networks, knowledge, and niches: A sociological examination of worldwide competition in the semiconductor industry. *American Journal of Sociology*, 102: 659-689.
- Powell, W. W., Koput, K. W., & Smith-Doerr, L. 1996. Interorganizational collaboration and the locus of innovation: Networks of learning in biotechnology. *Administrative Science Quarterly*, 41: 116-145.
- Prahalad, C. K., & Hamel, G. 1990. The core competence of the corporation. *Harvard Business Review*, 68(3): 79-87.
- Provan, K. G., Beyer, J. M., & Kruytbosch, C. 1980. Environmental linkages and power in resource dependence relations between organizations. *Administrative Science Quarterly*, 25: 200-225.
- Provan, K. G., & Milward, H. B. 1995. A preliminary theory of network effectiveness: A comparative study of four community mental health systems. *Administrative Science Quarterly*, 40(1): 1-33.
- Provan, K. G., & Milward, H. B. 2001. Do networks really work? A framework for evaluating public-sector organizational networks. *Public Administration Review*, 61(4): 414-423.
- Provan, K. G., Veazie, M. A., Staten, L. K., & Teufel-Shone, N. I. 2005. The use of network analysis to strengthen community partnerships. *Public Administration Review*, 65(5): 603-613.
- Rosenthal, D. 1996. Who "owns" AIDS service organizations? Governance accountability in nonprofit organizations. *Polity*, 29(1):97-118.
- Rothaermel, F. T. 2001. Incumbent's advantage through exploiting complementary assets via interfirm cooperation. *Strategic Management Journal*, 22(6/7): 687-700.
- Rowley, T. J., Behrens, D., & Krackhardt, D. 2000. Redundant governance structures: An analysis of structural and relational embeddedness in the steel and semiconductor industries. *Strategic Management Journal*, 21: 369-386.
- Rowley, T. J., Greve, H. R., Rao, H., Baum, J. A. C., & Shiplov, A. V. 2005. Time to break up: Social and instrumental antecedents of firm exits from exchange cliques. *Academy of Management Journal*, 48(3): 499-520.
- Salamon, L. 1999. *America's nonprofit sector: A primer*. New York: The Foundation Center.
- Saxton, T. 1997. The effects of partner and relationship characteristics on alliance outcomes. *Academy of Management Journal*, 40(2): 443-461.
- Selden, S. C., Sowa, J. E., & Sandfort, J. 2006. The impact of nonprofit collaboration in early child care and education on management and program outcomes. *Public Administration Review*, 66(3): 412-425.
- Shan, W., Walker, G., & Kogut, B. 1994. Interfirm cooperation and startup innovation in the biotechnology industry. *Strategic Management Journal*, 15(5): 387-394.
- Shiplov, A. V. 2006. Network strategies and performance of Canadian investment banks. *Academy of Management Journal*, 49(3): 590-604.
- Snaveley, K., & Tracy, M. B. 2000. Collaboration among rural nonprofit organizations. *Nonprofit Management and Leadership*, 11(2): 145-165.
- Stone, M. M., Hager, M. A., & Griffin, J. J. 2001. Organizational characteristics and funding environments: A study of a population of United Way-affiliated nonprofits. *Public Administration Review*, 61(3): 276-289.
- Stuart, T. E. 1998. Network positions and propensities to collaborate: An investigation of strategic alliance formation in a high-technology industry. *Administrative Science Quarterly*, 43(3): 668-698.
- Stuart, T. E. 2000. Inter-organizational alliances and the performance of firms: A study of growth and innovation rates in a high-technology industry. *Strategic Management Journal*, 21: 791-811.
- Stuart, T. E., Hoang, H., & Hybels, R. C. 1999. Interorganizational endorsements and the performance of entrepreneurial ventures. *Administrative Science Quarterly*, 44: 315-349.

- Succi-Lopez, M., Lee, S. D., & Alexander, J. A. 2003. The effects of relative resource configuration, organizational legitimacy, and integration on divestiture decisions among health systems. *Health Care Management Review*, 28(4): 307-318.
- Todeva, E., & Knoke, D. 2005. Strategic alliances and models of collaboration. *Management Decision*, 43(1): 123-148.
- Twombly, E. C. 2003. What factors affect the entry and exit of nonprofit human service organizations in metropolitan areas? *Nonprofit and Voluntary Sector Quarterly*, 32(2): 211-235.
- Van Wijk, R., Van den Bosch, F. A. J., & Volberda, H. W. 2003. Knowledge and networks. In M. Easterby-Smith & M. A. Lyles (Eds.), *The Blackwell handbook of organizational learning and knowledge management*: 428-453. Cornwall, UK: Basil Blackwell.
- Walker, G., Kogut, B., & Shan, W. 1997. Social capital, structural holes and the formation of an industry network. *Organization Science*, 8(2): 109-125.
- Wasserman, S., & Faust, K. 1994. *Social network analysis: Methods and applications*. Cambridge, UK: Cambridge University Press.
- Wernerfelt, B. 1984. A resource-based view of the firm. *Strategic Management Journal*, 5: 171-180.
- Wholey, D. R., & Huonker, J. W. 1993. Effects of generalism and niche overlap on network linkages among youth service agencies. *Academy of Management Journal*, 36(2): 349-371.
- Wiewel, W., & Hunter, A. 1985. The interorganizational network as a resource: A comparative case study on organizational genesis. *Administrative Science Quarterly*, 30: 482-496.
- Zaheer, A., & Bell, G. G. 2005. Benefiting from network position: Firm capabilities, structural holes, and performance. *Strategic Management Journal*, 26(9): 809-825.

## Biographical Notes

**Bindu Arya** (PhD, University of Texas at Dallas) is an assistant professor of management at the University of Missouri–St. Louis. Her research on how social networks facilitate group outcomes has appeared in the *Journal of Management*. Her other research on the contribution of cross-sector alliances to sustainable development and multinational learning has been published in *Business Ethics Quarterly* and *Advances in International Management*.

**Zhiang (John) Lin** (PhD, Carnegie Mellon University) is an associate professor of organizations and strategy at the University of Texas at Dallas. His research focuses on strategic networks, decision making, and computational modeling. His work appears in the *Academy of Management Review*, the *Journal of International Business Studies*, the *Journal of Management*, *Management Science*, and *Organization Science*.