Managing Collaborative Effort: A Dyadic Analysis of a Public Goal-directed Network

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ABSTRACT

This paper examines the role of network managers in securing effort from network members in a large, publicly funded network providing health and health-related services to children and youth in Southern Alberta, Canada, called SACYHN. The research examines the similarity of organizations and ties to SACYHN managers to determine when ties to network managers are more likely to be a factor in getting organizations to work cooperatively with one another. Three hypotheses are proposed and tested using Multiple Regression Quadratic Assignment Procedure and standard regression analysis. Results were generally supportive of our hypotheses, indicating that ties to network managers do matter, especially under certain conditions of similarity.
With the changing role of government over the past couple of decades, what contemporary public management entails is changing as well. Whereas the assumption used to be that government was the one delivering the services it funds (Kettl, 2009), that is no longer necessarily the case given the hollowing out of government (Milward and Provan, 2001). The reasons for the changing role of government are numerous, whether it is to address non-routine problems or to improve the efficiency of service provision (Goldsmith and Eggers, 2004). However, one reason for the change has less to do with whether public or private organizations are providing the services and more to do with the realization that many complex problems do not fit within organizational boundaries and thus, addressing any important problem requires a multi-organizational strategy (Kettl, 2009). Because of this realization, managing complex inter-organizational networks is an important component of contemporary public management.

Inter-organizational networks have become increasingly more important in the delivery of many public services (O’Toole, 1996). The prevailing view has been that collaboration among organizations will lead to more effective ways of addressing community needs; a view that has been especially strong in health and human services (Provan & Milward, 2001). Single-agencies cannot meet all the needs of clients and a single-agency or silo approach to serving these clients has added to the problem, resulting in fragmentation of services (Keast et al., 2004).

A few studies have documented the connection between inter-organizational networks and client outcomes (see for example Lehman et al. 1994; Provan and Milward, 1995), and the logic is that by working together, the health and well-being of communities can be improved by the pooling of resources and expertise (Provan et al., 2005). The impetus behind inter-organizational networks is the collaborative advantage; collaboration among organizations creates opportunities to overcome limited resources by joining forces (Huxham and Vangen,
This makes possible tasks that might otherwise be impossible to accomplish by organizations through a traditional silo approach.

However, though early research offered evidence that collaboration and networks have positive effects, such as in the delivery of health and human services (Provan and Milward, 1995), it has also been demonstrated that collaboration among organizations is not easy and often results in its own set of problems (Huxham and Vangen, 2005). Scholars have only recently begun to figure out how a multi-organizational approach works and how governmental or other organizational leaders can effectively align multiple players across messy boundaries of action (Kettl, 2009).

Therefore, this paper is an examination of the role of public managers in securing the effort that is essential to attaining inter-organizational collaboration. Drawing on Barnard (1938) as a framework for understanding the basic management functions essential for achieving collective action, we focus on one of Barnard’s three functions of the executive, securing essential effort. Specifically, we examine whether network managers make a difference in facilitating strong, high quality ties among organizational members in a public goal-directed network. Thus, our research is guided by two research questions. First, do network managers make a difference in securing effort from network members? And secondly, under what conditions when do they make the most difference?

To address these research questions, we examine the case of the Southern Alberta Child and Youth Health Network (SACYHN). SACYHN was a large, publicly-funded goal-directed network with a mission to facilitate connections among organizations across a large region and across many different service sectors. We examine whether and when network managers made a difference in facilitating those ties through a dyadic analysis of the whole network.
Understanding how formal, goal-directed networks like SACYHN function is important given their contemporary role in government, but it is difficult to understand how a whole network functions without understanding the underlying patterns that combined together comprise the whole network. A whole network is an aggregate of the dyadic connections among member organizations; therefore, examining the dyadic structure underlying a whole network is important to understanding how to achieve collaborative advantage.

**NETWORK MANAGEMENT AND A BARNARDIAN FRAMEWORK**

With the recognition of the need for more collaboration among organizations and thus, the devolving of service provision to inter-organizational networks, publicly funded, goal-oriented networks are the building blocks of many government programs in the 21st century. Understanding how they function is essential for public management, leading to the need for the study of these networks as a whole (Provan, Fish, and Sydow, 2007). Though the study of whole networks is becoming more prevalent, especially in the public management literature, there is still a great deal we do not know about how formal, goal-directed networks function. One key issue is network management. As Milward and Provan (2006) discuss, there is a difference between management in a network versus the management of a network. The former relates to leadership and management tasks of individuals of organizations operating in a network context, while the latter is concerned with leadership and management of the network itself.

Though there has been recent research examining network management and leadership, we still do not know a great deal about what management and leadership entails in a network. Most of the work on network management has focused on what tasks a network manager needs to accomplish. For instance, Goldsmith and Eggers (2004) discussed the challenges a network
manager must master: aligning goals, providing oversight, averting communication meltdowns, coordinating multiple partners, managing the tension between collaboration and competition, and overcoming capacity shortages. However, it is unclear whether those tasks relate to management of a network or in a network: Krebs and Holley (2004) made the case for the necessity of managing a network in order to prevent the natural tendencies of homophily and proximity to cluster the network. They discussed the importance of a network weaver whose task it is to knit the network together. Other than a list of the skill set or capital a network weaver has, this discussion of what it takes to weave the network together is focused mostly on relationship building and facilitating collaboration. Milward and Provan (2006) described the task of network managers as management of accountability, of legitimacy, of conflict, of design, and of commitment, and discussed the difference between the management of these tasks as network manager and as manager in a network. Along similar lines, Bryson, Crosby, and Stone (2006) discussed the need for building legitimacy, building trust, and managing conflict in implementing cross-sector collaborations. Many of the essential management tasks outlined in these works overlap with each other, but most of these works draw more on experience than from an empirical examination of network management.

The tasks of the network manager in the studies discussed above overlap nicely with one another, but they also overlap with the work on network leadership. This lack of a clear distinction between network management and leadership leads to questions about the difference between these two concepts. Many of the tasks discussed as the tasks of the network manager are similar to the behaviors of network leaders, which has been the focus of much of the network leadership work. For instance, McGuire and Silvia (2009) examined the importance of leadership in the effectiveness of emergency management networks. They focused on the four
leadership behaviors of Agranoff and McGuire (2001): activation, framing, mobilization, and synthesizing. Silvia and McGuire (2010) examined the difference between network leadership and organizational leadership. They classified leadership behavior into three categories commonly used in the leadership literature: people, task, and organization-oriented behavior. They found that network leaders focused more on people-oriented behaviors and less on task-oriented behaviors, while organization-oriented behaviors were displayed by both types of leaders. Crosby and Bryson (2005) outlined the necessary traits and skills of network leaders, including authority, commitment, vision, integrity, and relational and political skills. They also distinguished between two types of leaders, sponsors and champions. However, it is not clear from the past work on network leadership what leadership is and how it may differ from network management.

Leadership and management of a network are important areas of study, as collaboration is not easy and collaborative inertia is a major challenge to overcome (Huxham and Vangen, 2005). However, overcoming the frustrations of collaboration among organizations may not be completely different from overcoming challenges to cooperation in organizations. After all, organizations are entities of cooperative action and the role of management is to overcome the challenges to cooperation (Barnard, 1938).

One major reason we know so little about managing a network is because the mechanisms for managing an organization conflict with what defines a network, as for instance hierarchy and the idea of networks as horizontal structures. Though we have learned that networks do have some elements of hierarchy or other formal control elements found in organizations (McGuire and Agranoff, 2010; Moynihan, 2009), networks as a unique form of organization are governed and managed in a different way (Provan and Kenis, 2008). Though the
same mechanisms for the management of an organization are not necessarily found in a network, such as hierarchy or formal means of accountability, these are only tools to achieve an end and that end is overcoming the challenges to collective action. Overcoming these challenges is a fundamental issue in networks, just as in organizations.

In his influential work of 1938, Barnard was primarily concerned with achieving cooperation in organizations, defining formal organization as “a system of consciously coordinated activities or forces of two or more persons” (73). A whole network is defined as “a group of three or more organizations connected in ways that facilitate achievement of a common goal” (Provan, Fish, and Sydow, 2007). Because the focus of both Barnard and of the whole network research is on collective action, the main difference between the two is the actors, individuals in organizations versus organizations in a network. However, individuals make up both systems and if we step back and focus on the principles behind achieving collective action, then a Barnardian approach to the study of formal, goal-directed networks, as a form of organization, is fitting. As Barnard argues, “fundamentally the same principles that govern simple organizations may be conceived as governing the structure of complex organizations, which are composite systems” (94-95).

The contribution of using a Barnardian approach to the study of network management is that by focusing on the three principles Barnard argues are always necessary to achieve cooperative action, this allows for a simplification of what the essential management tasks are in a collective action setting. Barnard’s three principles are the need for a coordinating and unifying purpose, the need for communication, and the need for personal willingness. These three principles relate to the numerous needs outlined in the literature on formal goal-directed management and leadership. As most of the management and leadership work has focused on
the need to manage accountability, legitimacy, conflict, and commitment, these management
tasks relate to establishing a unifying purpose, securing effort from participants, and having an
open system of communication. Though all three Barnardian functions are simultaneously
necessary and in combination lead to a system that functions; in this paper, we will examine
closely only the second function, securing the essential participant willingness.

What securing essential effort in a network setting entails also consists of many
components; however, we will examine one component that is especially important in a formal,
goal-directed network, and that is the quality of ties among organizational participants. Barnard
(1938) defined the function of securing the essential efforts as the work necessary to first bring
persons into cooperative relationships with the organization and secondly, to elicit services from
that person. A network is comprised not of organizations working cooperatively with another
entity, but with organizations working cooperatively with each other, creating a larger entity, the
network. Therefore, getting organizations to cooperate in the network setting entails getting
organizations into cooperative relationships with other organizational participants in the network,
and then ensuring that both organizations are contributing to that relationship. Getting
organizations into cooperative relationships relates to the extent of the collaboration between
network members, and whether organizations are contributing to the relationship relates to the
quality of the relationship between organizations.

This paper will be an examination of whether public managers have a role to play in
securing effort from organizations. Specifically, we examine whether network managers are
essential in facilitating cooperative relationships and high quality relationships between network
members and when this role of the network manager may be especially important.
Understanding this specific role of network managers is important to better understand what one
function of network management is and why and when it is essential in formal, goal-directed networks.

**HYPOTHESIS DEVELOPMENT**

When focusing on how to ensure that organizational participants in an inter-organizational network will contribute to the network, it is important to understand what mechanisms for accountability there are in a network context. Norms and general reputation are usually cited as a means of holding network participants accountable (Powell, 1990). In lieu of hierarchy, Ostrom (1990) stressed how reciprocity norms can lead to cooperation in governing common pool resources. Several empirical network studies have also found norms to be a significant mechanism for governing networks (see Brass et al., 2005 for a review). In addition, network structure can be a means of control as well, such as the role of cliques or closure in enforcing norms of cooperation (Brass et al., 2005). Thus, norms and network structure are fundamental components to consider when examining cooperative effort in a network setting.

Having the same norms and being connected to the same people/organizations could also be considered a form of homophily, since homophily is essentially similarity, whether it based on location, membership, or attribute (Borgatti et al., 2009). Homophily has long been an important factor in the study of networks (McPherson, Smith-Lovin, and Brashears, 2006), as has proximity, or similarity of location. Organizations that are similar, either because they are proximate to each other or share the same norms are more likely to work together (Monge and Contractor, 2003). Sustaining the quality of this relationship is also more likely, but it is unclear whether this is because of the ease of collaboration, shared norms, or because they are concerned about upholding their reputation. Though we may not understand the exact reasons for why similarity impacts relationships among people/organizations, we do know that similarity is an
important construct to consider when examining the relationships among organizations in a network. As the past research on networks suggests, we propose the following baseline hypotheses in regard to the relationship between similarity and the likelihood of organizational participants contributing effort to the network, based on both entering collaborative relationships with other organizations and sustaining those relationships at a high quality level.

*H1a:* The more organizations in a formal, goal-directed network are similar to each other, the more likely it is that the level of collaboration between the organizations will be high.

*H1b:* The more organizations in a formal, goal-directed network are similar to each other, the more likely it is that they will have a high quality relationship.

We argue, however, that network managers may also be essential in achieving cooperation, especially in a formal, goal-directed network where organizations are not coming together serendipitously. Rather, when organizations are working together to achieve a collective goal, the network goals may not always be clearly beneficial to their own organization. In addition, the norms so important for holding organizations accountable may not be present if the organizations working together are not similar enough to share the same norms or be concerned about their reputation. Though organizations working together in a network are interdependent, interdependency can include many different forms and which affect the likelihood of cooperation differently. For instance, Fenger and Klok (2001) in addressing collective action examine the likelihood of cooperation based on three types of interdependency (symbiotic, independent, or competitive) and three types of beliefs (congruent, indifferent, or divergent). Casciaro and Piskorski (2005) distinguish between interdependence that is mutually dependent and power imbalance. Therefore, it is important to consider the similarity of organizations and the likelihood of when collaboration will be easier and when it will be more
difficult. In the cases where collaboration is less likely to happen serendipitously, either because of the type of interdependence between organizations or the lack of shared norms, then we argue that network managers will be essential in assuring organizations are putting forth network effort. Network managers can act as a substitute for norms, structure, or generalized reputation and facilitate connections among organizations and assure the organizations are contributing effort to the network. Network managers can do this if they are able to influence the network organizations, which they can only do if there is a strong tie between the network managers and the member organizations. Therefore, strong ties to network managers will also be a factor in securing effort from organizations, both by increasing the level of collaboration between network organizations and by increasing the quality of the relationships between network organizations.

Stated as hypotheses:

\[ H2a: \text{If two organizations in a formal, goal-directed network both have a strong tie to the network managers, the more likely it is that the level of collaboration between these two organizations will be high.} \]

\[ H2b: \text{If two organizations in a formal, goal-directed network both have a strong tie to the network managers, the more likely it is that they will have a high quality relationship.} \]

Though we hypothesize that ties to network managers will matter, we also hypothesize they are likely to matter more under certain conditions. It is in those cases where collaboration is not as easy, because of the lack of similarity between organizations, that ties to network managers will be most important. We argue that network managers will be essential in assuring organizations are putting forth network effort when similarity is not present as a driving force behind the relationships; which leads to the following final hypothesis.
**H3a:** The more dissimilar organizations are in a formal, goal-directed network, the more likely it is that the level of collaboration between these organizations will be high when both have a strong tie to the network managers.

**H3b:** The more dissimilar organizations are in a formal, goal-directed network, the more likely it is that the quality of the relationship between these organizations will be high when both have a strong tie to the network managers.

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**RESEARCH METHODS**

**Research Setting**

This study will examine the case of The Southern Alberta Child and Youth Health Network (SACYHN). SACYHN was founded in 2001 to facilitate more decentralized services for children and youth and to address the problem of fragmentation in the delivery of health services for children. The mission of SACYHN has been to use the collective resources and expertise of participant organizations to advance high quality, coordinated programs and services for children, youth and families.

At its inception, network leaders decided to define health in the broadest sense; not as healthcare, but as health and well-being. Thus, in order to address child and youth health and wellness, an inter-sectoral perspective was needed, building respect and collaboration across organizations in multiple child-serving sectors. These included both public and nonprofit organizations in physical health, mental health, education, social services, and justice.

In addition to the cross-sectoral focus, importance was placed on coordinating services across geographical regions. The founding of the network was announced as part of the funding of a children’s hospital in Calgary, with the network seen as reinforcing a mandate of the
children’s hospital to offer specialized health services to children and youth throughout the Southern Alberta region.

SACYHN’s governance model resembled the NAO model proposed by Provan and Kenis (2008). A steering committee consisting of a subset of network members acted as a board of directors and was responsible for the setting of policy and planning decisions. The actual operations of SACYHN were managed and coordinated by the SACYHN staff, which consisted of a full-time director and several full-time staff members, all of whom were officially employed by one government agency, the Calgary Health Authority. One-third of SACYHN’s funding came from the financial resources committed by participating organizations, while the remaining two-thirds funding was from the Calgary Health Authority.

Since Southern Alberta is a large region, the SACYHN network was divided into four smaller regions consist of three rural and one urban (Calgary) region. These regions are geographically distant, covering the entire lower half of a province that spans over 250,000 square miles. The network members in the four regions were formally organized into sub-networks, whose members were to represent the needs of that region and to serve primarily in an advisory capacity to the SACYHN Steering Committee. The official tasks of the regional network representatives and the Steering Committee were to engage partners in the four regions, extend the impact of SACYHN initiatives, and contribute to a seamless system of care.

Thus, SACYHN is an example of leveraged government (Kettl 2009). Most of the member organizations are traditional public organizations working to serve the children and youth of Southern Alberta. However, to better address child and youth health and well being, the need for a multi-organizational strategy was recognized as a better way to approach this larger complex problem.
Data Collection

The collection of data on SACYHN occurred between September 2008 and March 2009. Due to announcements of a possible reorganization of the entire province’s health system, an effort was made to collect the data before any system-wide changes were implemented. A complete reorganization of the health system began in January 2009, which placed SACYHN in limbo until its formal disintegration by summer of 2010.

The data were collected by an organizational questionnaire and by conducting interviews. The data collection effort was bounded by the formal structure of SACYHN; any organization with representation on the Steering Committee, a regional sub-network, or a working group was asked to respond to the questionnaire. The total number of organizations initially contacted was 53. The total number of respondents surveyed was 137, multiple individuals were asked to respond to the questionnaire for those organizations that were very large. The actual organizational response rate was 88% (42/48 – 5 organizations did not have a respondent identified or no longer existed), while the individual response rate was 76%. The questionnaire was one adapted from network research by Provan and colleagues (cf. Provan and Milward, 1995; Provan, Huang, and Milward, 2009). There were three main components of the questionnaire: organizational demographics, questions regarding organizational ties (i.e., network relationships), and perspectives regarding the impact of SACYHN.

In the last stage of data collection, elite interviews were conducted with SACYHN staff and key individuals in the system. The list of individuals who were contacted for an interview was developed using strategic sampling. That is, individuals representing different sectors, different organizational levels, and different levels of involvement in the network (i.e., core/periphery) were identified, in order to get a representative sample of opinions across the full
network. The interviews were conducted by three different individuals, so a list of questions was used as a guide. The goal of the interviews was to gain a better contextual understanding of the network, its operation, and the interviewee organization’s role in the network, so the interview protocol was used only as a guide. Some of the interviews involved multiple interviewees resulting in a total of 25 individuals who were interviewed during 16 interviews. Interviews lasted from 30 to 75 minutes.

**Measures – Dependent Variables**

Securing essential effort was defined by Barnard (1938) as the work necessary to first bring persons into cooperative relationships with the organization and secondly, to elicit services from that person. As the goal of SACYHN was to facilitate cooperative relationships among member organizations, then the first aspect of securing essential efforts relates to the outcome of member organizations collaborating with each other. The second aspect relates to the outcome of how well the organizations are working together.

Data measuring the extent of the working relationships between network member organizations came from the organizational questionnaire. Data on organizational ties were collected by having respondents complete a matrix listing all 53 organizations originally in SACHYN in which they were asked to identify which of six types of links (if any) their organization had with the other 52 organizations “over the past year.” The six types of links were the activities SACYHN members deemed most important to SACYHN: strategic planning, shared resources, service delivery, education, research/evaluation, and information sharing. Responses to this question were only counted if confirmed. That is, both agencies in a dyad pair had to indicate that a particular type of link existed for it to be considered as a valid response (Marsden, 1990).
The first dependent variable, collaboration between organizations, was measured by the multiplexity of the tie between dyads. Multiplexity is a measure of how robust a tie is; the idea is that a tie based on many shared activities is stronger than one based on fewer activities because the tie will still exist even if some of the reasons for the tie no longer exist. The multiplexity of the tie was used to measure the extent of collaboration among the organizations, as the more activities connecting two organizations, the more the organizations are working together. Multiplexity was measured here by the total number of confirmed activities between each dyad with possible values ranging from 0 (no relationship) to 6 (relationship present based on all 6 types of activities assessed in the survey). The higher the number of shared activities between a dyad, the more robust the collaboration between the organizations of the dyad.

Even if organizations are collaborating with one another, they may not be working well together and one organization may in fact be frustrated by the lack of effort on the other organization’s part. Therefore, the second dependent variable relates to the effort the organizations put into the relationship. In responding to the questionnaire, organizational respondents were asked to rate the quality of the relationship between their organization and the organizations with which their organization had a relationship. Relationship quality was defined in the questionnaire as “how confident you are that the organization will do what they say they will do in its dealings with your organization, based on your expectations, and not just focus on the needs of their own organization”, a dimension of relationship quality which aligns with the idea of eliciting effort from the organizations. Relationship quality was rated by organizational respondents on a 5 point scale ranging from 1 (poor relationship) to 5 (excellent relationship). To transform this data to a dyadic variable, the minimum value of the relationship quality reported by both organizations in a dyad was used as the measure of the relationship quality of
the dyad. Thus, if organization A rated the quality of the relationship with organization B as a 4, but organization B rated the quality of the relationship with A as a 3, then the relationship quality was confirmed as a 3.

**Independent Variables**

We measured five independent variables and one control variable. Similarity was included in the analysis through several variables measuring the extent of the similarity based on specific organizational attributes among organizations. Since the goal of SACYHN was to connect organizations across service sectors and across regions, service sector and region were the main similarity variables. Service sector was based on an item in the questionnaire asking respondents to indicate the percentage of resources their organization spent on activities in regard to children and youth. The organization was then included in the service sector where it spends majority of its resources. There were five service sectors: health, justice, social services, K-12 education, and higher education. A same service sector variable was compiled at the dyadic level; for each dyad, if both organizations were considered in the same service sector this was coded as 1, and coded as 0 if they were not in the same service sector.

A variable was constructed in the same way for same region. Which region an organization belongs to was based on its membership on the regional committees, and secondary data was used to place organizations not serving on regional committees. There were six regions, four rural regions, one urban region and one region for those organizations based in the provincial capital located outside of the geographical boundary of the network, in Northern Alberta. For each dyad, if the two organizations were located in the same region, the variable was coded as 1 and 0 if they were not located in the same region.
Variables measuring the similarity between dyads based on reputation and on norms were also compiled. In addition to the matrix of relationships on the questionnaire, respondents were also asked questions regarding other organizations in SACYHN, such as those organizations they perceived as influential, similar to their organization, those they considered to have an especially good reputation based on the work they did, and the relationships most critical to their organization. For these questions, respondents were asked to list up to five organizations for each question. The variable, same reputation was created by first totaling the total number of ties an organization was nominated by other organizations. Then, if an organization’s total number of nominations was greater than the mean, this organization was coded as highly reputable (1=highly reputable, 0=not highly reputable). For each dyad, if both organizations were highly reputable, then this dyad was coded as same high reputation (1=both organizations highly reputable, 0=one or neither organizations highly reputable).

Similarity of norms was measured differently than same reputation. Respondents were asked about which organizations their organization is most similar to; specifically, they were asked “which organizations do you believe have norms, values, and ways of working that are most similar to yours.” This variable was left in its original form, meaning that the variable is a matrix and a 1 indicates that an organization nominated the other organization as similar to their organization and 0 for all other cells.

The variable, ties to SACYHN managers was based on the particular dyadic ties between network members and the staff committed to managing the network. These ties were not included elsewhere in the analysis, but the ties organizations had to the SACYHN staff was collected in the same way as the ties among organizations. The SACYHN staff was included as a separate organization in the matrix of organizations. If an organization was connected to the
SACYHN staff through at least 4 of the 6 shared activities (more than half of the activities), then this relationship was coded as a 1, indicating a strong tie and otherwise, a 0 indicating not a strong tie. Then for each dyad, if both organizations had a strong tie to the SACYHN staff this was coded as 1, and 0 if they did not both have a strong tie to the staff.

The final variable was a control variable for those organizations serving on the SACYHN Steering Committee. Since serving on the steering committee is likely to create an additional opportunity for organizations to work more closely with each other and since collaboration has been found to be more likely if partners have similar status and power (Brass et al., 2004), a control was included for this similarity attribute. If both organizations of a dyad had a seat on the steering committee, then this was coded as 1, and if not, 0.

ANALYSIS AND FINDINGS

The analysis consisted of first Multiple Regression Quadratic Assignment Procedure (MRQAP) analyses and then several standard OLS regression\(^1\). Before running the regressions, however, a correlation matrix of all the variables was constructed using QAP, since all of the variables were in matrix form (see Table 1).

Table 1 shows that several of the independent variables were highly correlated with each other. “Same norms” was highly correlated with most of the variables, which is not surprising as having the same norms is likely to occur when organizations are similar in other ways. Therefore, the variable “same norms” was excluded from the analysis and the other more precise measures of similarity were included. In addition, having the same reputation was highly correlated with steering committee membership. This also is not surprising as those organizations perceived as having a good reputation are likely to be the ones asked to serve on

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\(^1\) Because all of the variables are dichotomous variables, standard regression is likely not the best model. A more appropriate analysis will be investigated and used in future versions of the paper.
the steering committee. Since same reputation was also highly correlated with ties to SACYHN managers, same reputation was dropped from the analysis and steering committee membership was included as a proxy for reputation.

To examine which factors are impacting the effort of network member organizations, two MRQAP analyses were performed. Standard statistical tools in analyzing network data can be problematic because of the lack of independence among the observations. This lack of independence can lead to unreliable standard errors. To address this problem, QAP was created to specifically analyze network data, in matrix form. MRQAP is a two step regression process, where the first step is a standard regression model. The second step involves permutations of the rows and columns of a matrix and estimation of the standard errors, creating a distribution of standard errors. The standard errors from the first step are then compared to the distribution of standard errors constructed from the second step to determine if the original standard errors are significantly different. For our MRQAP analysis, we used the Double Dekkar Partition Semi-Partialing method in UCINet (Borgatti, Everett, and Freeman, 2002). This method has been found to be robust under a variety of conditions either because of autocorrelation, spuriousness, or skewness (Dekker, Krackhardt, & Snijders, 2007).

The extent of collaboration between the dyads was the dependent variable for the first MRQAP analysis and the quality of the relationships for the second analysis. The results of these two analyses are shown in Table 2. From the MRQAP analyses, we can see that all the variables are significant, indicating that similarity and ties to the SACYHN managers both matter in explaining the level of collaboration among organizations. More specifically, if both organizations of a dyad are in the same region, perform the same service, or serve on the steering committee they are more likely to work together in more ways and are more likely to have a
higher quality working relationship. In addition, if the organizations of a dyad both have a strong tie to the SACYHN managers, then they are also more likely to work together in more ways and are more likely to have a higher quality working relationship. Therefore, hypotheses 1a, 1b, 2a, and 2b were all supported.

However, this tells us very little about when ties to the SACYHN managers may matter more. Therefore, to test Hypothesis 3 and see if ties to SACYHN managers are especially important when organizations are dissimilar, standard regressions were also performed.

The network matrices were reshaped in order to have each dyad as a case. This process was accomplished using the reshape function in STATA. Sets of dyads were then compiled based on dissimilarity. Specifically, a set was created including only those dyads not in the same region, a set for those organizations not providing the same service, and a set for those dyads not in the same region or providing the same service.

For each of these sets, an OLS regression was performed using the regression function in UCINet. Because of the problem of unreliable standard errors with network data discussed above, the UCINet function was used because this regression function includes a second step, random permutation, to generate unbiased coefficients. The results of these regressions are reported in Table 3.

In Table 3, we see that the variable, ties to SACYHN managers is important in explaining multiplex ties and high quality relationships among organizations not in the same region. Interestingly, ties to SACYHN managers are not significant in explaining either multiplex ties or high quality relationships among organizations not providing the same services. However, when organizations are not in the same region nor provide the same service, then ties to SACYHN managers is again significant.
To examine the counterfactual sets, another set of regressions were performed but this time on the sets of organizations based on similarity (similar region, similar service, and similar region and service) to see if the results differed from the results examining the dissimilar sets. These results are reported in Table 4. The model examining the set of similar region organizations does a very poor job of predicting collaboration and the quality of relationships. These results, though, combined with the results from the set of organizations in different regions, at least shows us that ties to SACYHN managers do not matter when it comes to collaboration among organizations in the same region nor the quality of those relationships. However, these ties do matter when organizations are not necessarily in the same region, but do provide the same service. And when organizations are in the same region and provide the same service, ties to the SACYHN managers are significant. Thus, hypothesis 3 was partially supported. There was support for the hypothesis when organizations are not located in the same region, but it was not supported when organizations do not provide the same service.

CONCLUSION

By examining the dyadic ties of the Southern Alberta Child and Youth Health Network (SACYHN), a formal goal-directed network, we were able to explore when similarity among organizations matters in getting organizations into cooperative relationships with one another, and when strong ties to SACYHN managers matter. We found that organizations that are similar to one another, either based on region, service sector, or status are more likely to collaborate with one another and to have higher quality relationships. We also found that when two organizations both have strong ties to the SACYHN managers, they also are more likely to collaborate with one another and to have a higher quality relationship.
When ties to SACYHN managers matter most in securing effort from organizations is based on the level of interdependence between the organizations. We found that when organizations are not in the same region, ties to the SACYHN managers were significant in regard to the multiplexity of the ties between dyads and the quality of the relationship. This offers some evidence that network managers may have an important role to play in facilitating cooperative relationships among organizations not located in proximity to each other. This suggests that in the absence of the accountability offered by an organization needing to maintain its general reputation in its region, network managers may be important in getting organizations in different regions to work together and to put forth the effort to maintain a high quality relationship. When organizations are in the same region, the role of the network manager is less important.

Contrary to the findings for organizations in different regions, ties to SACYHN managers were not significant in explaining the multiplexity of relationships or the quality of relationships between organizations in different service sectors. Though this finding refutes our hypothesis, it is not surprising as organizations providing different services are not competing with one another. Therefore, where network managers may have an important role to play in regard to similarity based on service sector is in getting organizations providing the same services to work closely with one another and to trust one another. This is what we found when we examined the set of organizations providing the same services, ties to SACYHN managers were important factors in explaining multiplexity and high quality relationships.

Thus, what this research offers is some evidence that network managers make a difference in securing the effort necessary to achieve inter-organizational collaboration, but when that role is most important depends on the level of interdependency between organizations.
Whereas organizations in the same regions may be symbiotic and thus, will need less urging to work with each other, organizations providing the same service are competitive and will need more urging to work closely with each other and trust each other (Fenger and Klok, 2001). Whereas organizations not in the same region and not providing the same services are quite independent of each other, they may also require urging to working closely together. This is what we found when examining the set of organizations not in the same region and not providing the same services, ties to network managers were important.

[Draw on interview data to illustrate why ties to SACYHN managers matter in securing effort].

These findings have important implications for both theory and practice. First, by focusing on one management function, securing essential effort, we can better understand a fundamental network management function and the role network managers play in getting organizations into cooperative relationships and assuring they contribute the effort necessary to sustain those relationships. This network manager role may not be important when organizations are similar enough, either because it is easier for them to collaborate in the first place or because there are similar norms holding the organizations accountable to one other. Thus, when the interdependence between two organizations is symbiotic, network managers may not be essential in securing effort from network members. But when organizations are either independent of one another, because they are so dissimilar, or competitive with one another, because they are too similar, then network managers may be essential in getting organizations to collaborate with one another and put forth enough effort in the relationship so that they trust one another.

This research also has practical implications as it can help network managers in managing the effort necessary to achieve collaborative advantage. Understanding when the role
of network manager may be essential in getting cooperative relationships among organizations depends upon the type of interdependence between organizations, can help network managers know where in the network they need to focus their efforts.

This work is an attempt to contribute to the limited research on network management by focusing on the basic management functions necessary to achieve collective action. By focusing on one of those functions in this work, we have shown that one function of network managers is to secure effort from network members. Network managers may not necessarily need to be concerned with securing effort by facilitating cooperative relationships between all member organizations; rather, the role of the network manager may be to facilitate relationships where relationships are less likely to happen serendipitously, specifically when organizations are independent of one another or compete with one another. The behaviors of network managers revolve around easing collaborative inertia so collaborative advantage is achieved. If it is recognized that one of the reasons for these behaviors is to secure effort, then our understanding of network management can be progressed by also recognizing when securing that effort will be more difficult; and thus may require nudging by network leaders.

This study is, of course, not without its limitations. Even though the analysis here was dyadic, these dyads are all embedded in one whole network, making this essentially a case study. Examining how organizations are connected and which factors impact these connections in one network is valuable in that it can provide a better understanding of the patterns underlying whole networks. However, it is difficult to generalize based on the examination of one case, even when examining the large number of dyads possible in one case. Another limitation is that the data are cross-sectional. Longitudinal research on the case would help determine causality, specifically if network managers are making a difference in the extent of collaboration among organizations.
and the quality of the relationships, or if the relationships found in this network represent what naturally occurs over time in working with a network. In addition, the network managers in this study were defined by the structure; however, it is important to note that other individuals in the network may have been the ones essential in securing effort among organizations. For instance, though SACYHN managers were not important in securing effort between organizations in the same region, this may have been because of the leadership of regional leaders, and ties to those leaders may have more explanatory power when examining relationships among organizations in one region. It is important to examine who the leaders/managers are in network in order to better understanding what network management is and when it is important. Future research can examine whether there are different ‘effort leaders’ and in what situations ties to these other effort leaders may also be important.

Despite these limitations, we believe that our work contributes to a deeper understanding of network management, especially in networks governed by a network administrative organization. By focusing on the basic functions essential in achieving collective action, we can better understand why and when network managers may have an important role to play in ensuring organizations in a formal, goal-directed network are contributing effort to the network. Aligning multiple players across many boundaries of action, means aligning many organizations with varied levels and forms of interdependencies. Getting these multiple players to work together just may be the essential role of network managers in making a multi-organizational approach to contemporary public management work.
REFERENCES


Table 1

Means, Standard Deviations, and Correlations for Variables

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*p ≤ .05, **p ≤ .01, ***p ≤ .001
Table 2

QAP Regression Analysis Predicting Effort between Dyads in the SACYHN Network

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Table 3
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1 Regression equation run using UCINET 6, which does not report or standard errors.

2 The variables associated with the similarity basis of the set were not included in the models using those sets.
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* Regression equation run using UCINET 6, which does not report or standard errors.