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The Drivers of Collaborative Success Between Rural Economic Development Organizations

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Abstract

The nonprofit literature has directed attention to exploring how features of the broader structure of exchanges within regional collaboration networks impact the dynamics and outcomes of a single partnership. This study examines how partners' relative positions within a collaboration network impact their interdependence and collaborative success. Our analysis of 298 collaborations between 98 economic development organizations operating in an economically distressed rural region demonstrates that social network properties—structural embeddedness and relative centrality—have substantial effects on exchange partners' collaborative success. We also investigate whether network effects are mediated by the two dimensions of interdependence, mutual dependence and power imbalance. Together, our theorizing and results speak to the driving factors of collaborative success in a context where collaboration is particularly vital.

Keywords

collaboration, social networks, resource dependence, economic development

Introduction

Over the past few decades, rural counties have replaced large cities as America's most troubled areas along key economic indicators, such as poverty, college attainment, and labor-force participation (Adamy & Overberg, 2017). Poor economic performance and

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low employment levels due to the decline in natural resource-based industries, such as coal mining, agriculture, fishery, and forestry, coupled with population loss have left many rural communities distressed (Borich, 1994; Gordon, 2007). Successful job creation to overcome persistent poverty and raise incomes is an important goal of economic development programs in rural towns (Green & Fleischmann, 1991; Leigh & Blakely, 2016). In distressed regions, local governments are not the only organizations working to improve economic conditions (Green, Haines, Dunn, & Sullivan, 2002). Indeed, nonprofit rural economic development organizations (EDOs) have come to play a vital role in altering this troublesome trajectory (Crowe, 2007; Young & Cargill, 1994).

Nonprofit organizations such as certified development corporations, community action organizations, tourism commissions, and workforce training institutes undertake various aspects of the local economic development problem (Compion et al., 2015; Woller & Parsons, 2002). In light of significant constraints in their resource environments, nonprofit EDOs rely on collaborations with one another to address broad economic development goals such as recruiting new businesses, retaining/expanding existing businesses, creating new high-quality jobs, increasing entry-level wages, and ultimately improving local economic vitality (Green et al., 2002). Like public health and human service delivery (Chen, 2010), collaboration in the economic development arena is characterized by multiple dimensions (Oh, Lee, & Bush, 2014), and in this study we view collaboration as linkages between two nonprofit EDOs through reciprocated referrals, joint projects, and resource exchange to enhance regional economic development.

EDOs have a strong incentive to work together for their region as a whole given their proximity and shared political, cultural, and economic environment (Eller, 2008). The nature of the local economic development problem requires collaborative, multilateral efforts by multiple development organizations (Leigh & Blakely, 2016). However, EDOs are also incentivized to act on behalf of their respective counties and constituents, which may be at odds with the interests of their peer organizations (Feiock, 2002; Gordon, 2007). The social structures formed from the collective actions of individual EDOs can shape the power dynamics of a given partnership, making some partnerships more balanced and others imbalanced. Characteristics of that power dynamic can affect the collaborative outcomes of a given partnership (I. W. Lee, Feiock, & Lee, 2012). Yet, research is only beginning to explore how features of the broader structure of exchanges within a regional collaboration network impact the interdependence and success of a given partnership.

The nonprofit literature notes that reduced funding and enhanced community expectations have led to the emergence of collaboration networks in this sector (Bunger, 2013). Collaborations among multiple organizations have become the norm for the delivery of public services such as mental health (Huang & Provan, 2006; Milward, Provan, Fish, Isett, & Huang, 2009; Provan & Huang, 2012; Provan, Isett, & Milward, 2004), community family preservation (Chen & Graddy, 2010; Graddy & Chen, 2006), early childhood education (Selden, Sowa, & Sandfort, 2006), and regional

economic development (I. W. Lee, Feiock, & Lee, 2012; Y. Lee, Lee, & Feiock, 2012). Although the unit of analysis in studies examining nonprofit collaboration outcomes is largely the organization (Gazley & Guo, 2015), researchers have focused on different levels of network analysis. This can vary from the complete system (i.e., whole network level), which is concerned with whether network goals (e.g., emergency response, comprehensiveness of health care services) are achieved by the participant organizations (Provan & Lemaire, 2012; Provan & Sebastian, 1998), to linkages between two organizations (i.e., dyadic level), where researchers have often used managerial perceptions (i.e., ex post judgment of partners) to evaluate outcomes such as the capacity and/or effectiveness of a collaboration (Chen, 2010; Chen & Graddy, 2010; Gazley, 2010).

Relatively few studies on economic development networks have focused on collaboration outcomes at the dyadic level (I. W. Lee, Feiock, & Lee, 2012; Y. Lee, Lee, & Feiock, 2012), and we know of no studies that have done so in the rural, nonprofit context. Since rural areas are in acute need of economic development efforts (Adamy & Overberg, 2017), this study examines the drivers of successful partnerships between EDOs that constitute a rural economic development network. We define *collaborative success* as a subjective assessment between partners indicating their satisfaction with the collaboration and the extent to which it works smoothly. Accordingly, we integrate tenets of resource dependence theory (RDT; see Drees & Heugens, 2013 for a review) and social network theory (SNT; see Zaheer, Gözübüyük, & Milanov, 2010 for a review) to better understand how structural features of a rural EDO collaboration network impact the interdependence (i.e., dyadic power dynamics) and collaborative success of a partnership.

To this end, we analyze a relational dataset of 298 collaborations between 98 EDOs in the persistently distressed rural region of eastern Kentucky. We examine the network antecedents of both dimensions of interdependence, *mutual dependence* (i.e., the sum of partner dependencies) and *power imbalance* (i.e., difference in partner dependencies). RDT recognizes that power differences lead organizations from different sectors to engage in collaboration to secure resources to maintain their autonomy and independence (Barringer & Harrison, 2000; Pfeffer & Salancik, 2003), and SNT considers interdependence between organizations working toward a common goal a key foundation of networks (Brass, Galaskiewicz, Greve, & Tsai, 2004). From the social network perspective, the aggregate pattern of linkages in an exchange system form larger structures of connectivity. Some structures and positions are more advantageous due to the greater network resources, control, and/or capacity for cooperative action that they provide (Borgatti & Halgin, 2011).

We theorize that two commonly studied network characteristics (i.e., structural embeddedness and centrality), due to the unique set of network resources and control benefits associated with each (Arya & Lin, 2007; Gulati & Sytch, 2007), are likely to have distinct impacts on interdependence with differential influence on collaborative success. Figure 1 summarizes the mediation model we elaborate and test empirically.

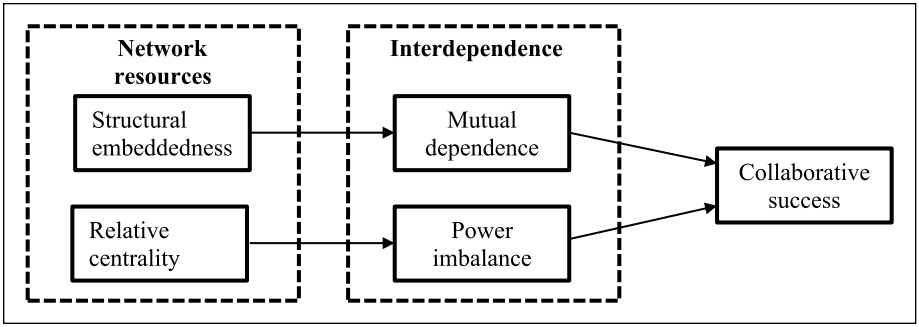

Figure 1. Theoretical framework.

Theory and Hypotheses

Impact of Structural Embeddedness on Collaborative Success

The network resources that we theorize impact exchange partners' mutual dependence and collaborative success are those derived from the network characteristic *structural embeddedness*, which is defined as the extent to which two organizations share multiple collaborators. A greater number of shared ties are likely to result in more advantageous information exchange, leading to higher levels of trust, cooperative norms, and reciprocity between partners (Gulati & Sytch, 2007; Simsek, Lubatkin, & Floyd, 2003; Uzzi, 1997). Structurally embedded network partners will also be better able to distinguish between good and bad information since they can more easily verify this information with other network members. In addition, given the "audience effect" and increased monitoring of more embedded structures (e.g., third-party whistleblowers), structural embeddedness reduces the overall risks of exchange (Coleman, 1990).

Structural embeddedness also increases the coordinative capacity of a partnership. It permits third parties to coordinate their actions against uncooperative behavior, which facilitates effective sanctioning and incentivizes network members to act in accordance with the norms of the network (Coleman, 1988; Jones, Hesterly, & Borgatti, 1997). In addition, it should also increase opportunities for the partnership to initiate multilateral (i.e., consisting of three or more actors) actions to pursue common goals.

The network resources associated with structural embeddedness should be especially valuable in regional economic development networks since coordinative demands and competition are often heightened in local economic development efforts (Leigh & Blakely, 2016). Rural development organizations, in particular, face greater constraints in their resource environment, which increases the value of resource sharing and collective action in tackling the development problem (Green et al., 2002). The enhanced coordinative capacity of structurally embedded EDOs should enable partners to leverage shared ties to provide broader, more comprehensive solutions (e.g., multicounty training initiatives, marketing campaigns, client referrals, policy advocacy,

assistance to entrepreneurs, infrastructure development, etc.) to the local economic development problem.

In sum, the reduced risk, higher levels of trust, shared norms, greater reciprocity, richer and more reliable information exchange, and enhanced coordinative capacity associated with structural embeddedness are likely to positively impact partners' collaborative success.

Hypothesis 1: Structural embeddedness is positively associated with collaborative success.

Higher costs of forging new collaborative partnerships in an economic development context should incentivize partners to rely increasingly on their existing network ties (Feiock, Lee, & Park, 2012), leading to a greater dependence on exchange partners. Due to the higher levels of trust, shared norms, richer and more reliable information exchange, and the enhanced capacity and need for cooperative efforts, structurally embedded partners will place higher strategic value on those relationships. These shared network resources are likely to serve as a basis of joint *social power*, which should incentivize partners to increasingly leverage and rely on those ties, and the social power that they provide, to better pursue their social missions. As a result, shared network resources associated with structural embeddedness are likely to increase the mutual dependence between partners so that they can better meet their goals.

Mutual dependence, in turn, is likely to positively impact collaborative success because it increases exchange partners focus on joint success and a long-term orientation that perpetuates cohesiveness and greater cooperation between dyads (Gulati & Gargiulo, 1999). Highly dependent relations also engender greater similarity between partners (DiMaggio & Powell, 1983), resulting in a greater convergence of values, attitudes, and goals. Goal convergence makes communication and negotiation less conflictual, which improves the quality and efficiency of the exchange (Gulati & Sytch, 2007).

Since EDOs are highly competitive, competing for grants, federal assistance, outside investments, clients, and for companies to locate within their respective jurisdictions (Leigh & Blakely, 2016), development efforts can be hampered by distrust and strong perceptions of fierce competition between communities for economic development projects (Gordon, 2007). This creates a tension between the incentive to compete and the incentive to cooperate (Feiock et al., 2012; I. W. Lee, Feiock, & Lee, 2012). Due to the greater relational orientation of mutually dependent partners and the greater trust it engenders (Lawler & Yoon, 1996), mutual dependence should reduce the uncertainty surrounding that tension in economic development efforts, thereby improving the collaboration between partners.

Hypothesis 2: Mutual dependence mediates the relationship between structural embeddedness and collaborative success.

Impact of Relative Centrality on Collaborative Success

Another network factor impacting interdependence and collaborative success is centrality, which is the total number of partners for a given organization (L. C. Freeman, 1978). Centrality in a collaboration context is associated with greater network resources since central organizations have a larger portfolio of ties that they can leverage to gain access to resources, coordinate activities, control information, and influence partners. Centrality provides actors with greater access to partner information, support, and capabilities that they can use to accomplish their goals (Arya & Lin, 2007; Lin, Yang, & Arya, 2009). Centrality can also serve as a signal of reputation and legitimacy, conferring status benefits to well-connected actors (Galaskiewicz, Bielefeld, & Dowell, 2006; Provan, Huang, & Milward, 2009).

We define *relative centrality* as the difference between one organization's centrality and another's. We theorize that the greater the centrality differences between partners, the greater the likelihood that there will be network resource imbalances that constrain the success of their partnership. Differences in network resources associated with relative centrality will increase differences in *social power* leading to greater power imbalance between partners. Significant power imbalance often makes collaboration between partners more difficult than collaboration between equal partners (Gulati & Sytch, 2007).

Furthermore, collaboration can involve significant costs. In rural areas in particular, more central, higher status organizations are more likely to have many incoming ties of dependence, since many partners rely on them for resources. Well-connected, central actors may be overburdened in serving the needs of less-connected network members with fewer collaborative ties and associated network resources. This is likely to lead to lower collaborative success compared to partnerships with similarly central organizations with more resources to bring to the collaboration. Indeed, an EDO director from this study writes, "Local capacity continues to be a bottleneck at facilitating partnerships. As a small staff there is only so much we can do on any given day." However, less central actors are less likely to wield influence in their relationships with more central partners (Boje & Whetten, 1981). As a result, the interests and objectives of the less central actors are likely to be more constrained in structurally dissimilar partnerships. For these reasons, relative centrality is likely to have a negative effect on collaborative success from the vantage point of both the highly central and less central actor.

Hypothesis 3: Relative centrality is negatively associated with collaborative success.

In rural contexts, nonprofits rely especially on their regional collaborations for resource access, and less central EDOs have fewer ties, and in turn, less options for resource access (Snavely & Tracy, 2000, 2002). Consequently, less central EDOs should be particularly dependent on their partnerships with more central EDOs that can provide them critical network resources and capabilities. Conversely, more central EDOs have a

lower need to depend on less central actors since they have many more options for resource access due to their larger portfolio of ties and since they possess other critical network resources such as reputation and/or capacity for broader coordination (e.g., leveraging multiple partnerships for development projects). Thus, centrality differences are likely to lead to network resource imbalances that can shape power imbalance.

In economic development collaboration networks, power imbalance is likely to have a negative effect on collaborative success. Greater resources, influence, and status controlled by the central actor enable it to have more control over the partnership, which can lead to conflict and diminished value creation for exchange partners (Kim & Choi, 2018). Greater dependence from the vantage point of the less central actor means that it has less power to extract value from the exchange. The interests and objectives of the more dependent partner are more constrained in the collaboration. This may lead to lower collaborative success compared with equally dependent partnerships characterized by higher levels of trust and less risk of opportunistic behavior (Vangen & Huxham, 2003).

Hypothesis 4: Power imbalance mediates the relationship between relative centrality and collaborative success.

Method

The study population is the universe of not-for-profit EDOs operating in the rural region of eastern Kentucky. This is an area that has been especially beset by persistent poverty and distress. Of all Kentucky counties classified as Appalachian by the Appalachian Regional Commission (ARC) in 1960; 74.1% (of 54 counties) are still considered distressed today (ARC, 2014). To combat these unfortunate economic conditions, EDOs in the region work in concert and individually to improve employment and job opportunities. They carry out activities such job training and leadership development, industrial recruitment, entrepreneurial counseling, and small business financing. Given the resource scarcity of the region and the cooperative nature of local economic development, collaboration is essential to their effectiveness as well as their collective interests (Eller, 2008; Snavely & Tracy, 2000).

The initial list of EDOs was compiled by the Appalachian Center at the University of Kentucky and was expanded and refined during the beginning of the study. That list included organizations that were members of the Growing Local Economies Network (GLEN), an organization created to promote and facilitate collaboration among development practitioners in eastern Kentucky. Utilizing the IRS public database on nonprofits that includes activity codes (IRS, 2011), we added to the list by identifying other nonprofit organizations that met the criteria of promoting "social and economic wealth" for the people of eastern Kentucky. Such codes included "community development," "economic development," and "workforce training" (IRS, 2011). To help bound the study population and inform the survey instrument, we conducted 16 semi-structured interviews with local experts. Interviewees included a former governor and university president familiar with development activities, employees of one of the

largest EDOs in the region, a banker involved in small business loans with a history of development work, and CEOs and Presidents of EDOs within the study region. Interview notes were taken to inform the following goals: (a) finalizing the list of relevant EDOs, (b) crafting the survey, and (c) gaining feedback on the overall purpose of our study. The final target population consisted of 203 organizations.

With the aid of the qualitative data provided by the interviews, we crafted an online survey to collect quantitative data on organizational and network characteristics. Three local experts and five graduate students pilot tested the survey, which resulted in a few minor revisions to improve item clarity. Once completed, we embedded the online survey in an introductory email to the final contact list of 203 EDO leaders. Each email was personalized and addressed the leader on a first name basis. Most of the leaders had titles such as "President," "CEO," "Chair," or "Director," and were chosen due to their unique vantage point in offering information regarding their organizations. In addition to the online contact, formal letters were sent via U.S. mail on university letterhead to the organizations that did not respond to the online invitation, and we also made phone calls to boost the response rate.

The final sample consists of 98 organizations, resulting in a response rate of 48%. We note that this a conservative estimate given that many of the organizations could not be contacted and/or existed only on paper. Included are economic development agencies, formal business alliances such as chambers of commerce, area development districts, tourism commissions, community development corporations, community action agencies, and workforce training institutions. With respect to organizational type, 97 of the organizations identified as "not-for-profit" organizations, and one organization identified itself as a "for-profit." We kept the "for-profit" in the sample since the primary mission of this community development financial institution was to promote economic development by providing financial products and services to people and low-income communities underserved by traditional financial institutions (Benjamin, Rubin, & Zielenbach, 2004). Figure 2 below summarizes the activities in which the sample EDOs are engaged.

The network variables were collected using a full roster method, in which participants saw a list of all the EDOs in the region, identified the ones they collaborated with during the previous year (i.e., 2012), and then answered more detailed questions about their *current* assessments of each of their relationships. Given the wide range of activities that EDOs engage in and the many ways they collaborate (Leigh & Blakely, 2016), and in consultation with EDO practitioners in the region prior to data collection, we measured collaboration as linkages between two organizations engaged in resource sharing (e.g., money, information) and/or coordination (e.g., referrals, projects). Utilizing the more detailed information regarding the nature of their partnerships, our analysis focuses on the set of 298 relationships/dyads that exist between the 98 EDOs.

Measures

Collaborative success. The two-item measure is an index based on managers' ratings of the satisfaction and efficiency of each of their collaborations. This measure is based on

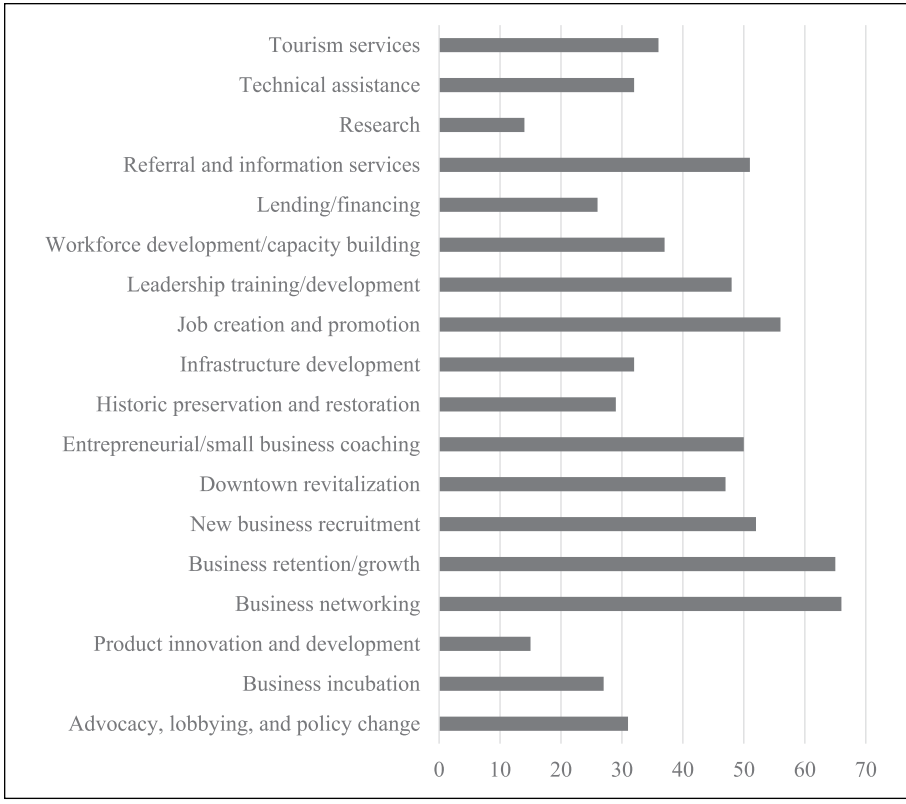

Figure 2. Economic development organization services.

similar constructs in the literature that capture managerial perceptions of collaboration (e.g., Chen, 2010; Chen & Graddy, 2010; Gazley, 2010). For the first item, actor *A* rated actor *B*, and vice versa, on how satisfied they were with the collaboration utilizing a Likert scale ranging from −2 to 2: *dissatisfied* corresponded to −2, *somewhat dissatisfied* corresponded to −1, *neutral* corresponded to 0, *satisfied* corresponded to 1, and *very satisfied* corresponded to 2. For the second item, actor *A* rated actor *B*, and vice versa, on the efficiency or "ease" of the collaboration utilizing a similar Likert scale. We then added the items for a possible collaborative success score ranging from −4 to 4. Although a two-item measure is not ideal, it is an improvement over one-item measures common in social network research (Marsden, 2011).

It should be noted that the collaborative success is not necessarily symmetric, meaning that if *A* rated *B* a value of −4, it is not necessarily the case that *B* rated *A* the same value. We kept directionality for this variable to test our theory that power imbalance would have a negative effect on collaborative success from the perspective of both the less powerful and more powerful partner.

Mutual dependence. We calculated this measure by taking the sum of the extent to which two EDOs, *A* and *B*, find the other organization critical to the accomplishment of their own organization's goals. *A* rated *B*, and vice versa, on a Likert scale ranging from 0 to 4 where *unimportant* corresponded to 0, *slightly important* corresponded to 1, *important* corresponded to 2, *very important* corresponded to 3, and *critical* corresponded to 4. We then took the sum of *A*'s rating of *B* and *B*'s rating of *A*.

Power imbalance. Conversely, we calculated power imbalance by taking the absolute difference of the extent to which two EDOs, *A* and *B*, find the other organization critical to the accomplishment of their organization's goals. In other words, we subtracted *A*'s dependence on *B* from *B*'s dependence on *A*.

Structural embeddedness. We measured structural embeddedness as the number of shared third-party collaborative ties between two organizations that collaborate. It is a count measure of the total number of shared collaborators between EDOs, *A* and *B*.

Relative centrality. To create the relative centrality measure, we first calculated the in-degree centrality of each EDO within the network. In-degree is the number of nodes that direct a tie to a given node, whose centrality is being measured. In our case, an organization *A*'s in-degree is the number of other organizations that considered *A* to be a collaborator. We then calculated relative centrality as the absolute difference in centrality scores for each pair of actors.

Controls

Organizational age difference. Organizational age difference was calculated as the absolute difference in age, based on the year of founding, between two EDOs. We controlled for this given the potential status, reputation, and/or influence disparities between older and newer organizations (J. Freeman, Carroll, & Hannan, 1983).

Service area overlap. Service area overlap is a measure of the total number of counties that an EDO shares with another EDO in the 54-county region. Serving the same counties could impact collaborative success by making it more likely that two EDOs will work cooperatively to achieve collective goals for their respective areas, thereby improving the likelihood of a positive outcome. On the other hand, shared service area could also *negatively* affect collaborative success by making it more likely that two EDOs will be competitors.

Service type overlap. Service type overlap is the total number of shared services between two organizations (see Figure 2 for service types). More shared services might mean a greater need for collaboration for goal achievement or might encourage competition between two organizations.

Service breadth. Service breadth is the total number of non-redundant services offered between two organizations. Greater service breadth might lead to greater complementarity in working with partners to meet client needs.

Organizational size difference. Organizational size difference was calculated as the absolute difference in the total number of full-time employees between two EDOs. Organizations with smaller differences are considered to be more similar in terms of organizational size.

Funding overlap. We measured funding overlap dichotomously. If two organizations received funding from the ARC we coded the variable as 1 and 0 otherwise. We focus on this funding source since the ARC is a primary source of funding for organizations engaged in development efforts in the region (ARC, 2014).

Market power. We controlled for market power by measuring the total number of different funding sources for each dyad. Nonprofits use diversification of revenue streams as a central tactic in reducing dependence (Froelich, 1999). This measure captures not only the possession of critical resources (i.e., financial capital), but the availability of alternative suppliers of those resources for a given dyad. The six funding sources include government funding, private contributions, commercial activities, special events, membership fees, and interest income. For a given dyad, this measure can range from 0 to 12.

Analysis

Our analysis begins with a visualization of the network data. Next, we provide summary statistics, calculate bivariate correlations, run regressions, and conduct mediation analyses to test our hypotheses. Unlike traditional ordinary least squares (OLS) approaches based on parametric tests of significance, quadratic assignment procedure (QAP) uses a permutation/randomization method which compares each observed regression coefficient with the distribution of coefficients under the assumption of independence. To do this, the QAP method randomly rearranges the rows and columns of the data matrices thousands of times and runs a separate regression for each permutation. The p values for each regression parameter are obtained by counting the proportion of random permutations that yield regression coefficients as extreme as actually observed. Thus, the regression coefficients are calculated in the same way as OLS, but the significance or p values are obtained via the permutation test (Krackhardt, 1988).

Given that two of our hypotheses involve mediation, we use multiple regression quadratic assignment procedure (MRQAP) in combination with the Preacher and Hayes (2004) bootstrapping method to test for indirect effects. This analysis enables us to see the extent to which an independent variable affects a dependent variable through the mediating mechanism of a process variable, even when those variables are dyadic. We do so using *UCINET Version 6.647* (Borgatti, Everett, & Freeman, 2002),

which includes the procedure. The test essentially determines the extent to which the effect of an independent variable is reduced after including the mediator in the regression model. The statistical significance of the reduction of the independent variable's effect (i.e., indirect effect) is based on permutations of the raw data. This bootstrapping approach is often the preferred method to test for mediation because it makes no parametric assumptions when calculating the statistical significance of indirect effects, which usually do not exhibit a normal distribution (Preacher & Hayes, 2004). If the independent variable's effect diminishes to 0 after the process variable is included, then a *full mediation* has occurred. If the independent variable's effect diminishes considerably but not to 0 after including the process variable, then a *partial mediation* has occurred.

Visualization

Figure 3 below shows two sets of networks depicting mutual dependencies and dependence asymmetries, respectively. The nodes (i.e., squares) are the organizations and the ties (i.e., lines) represent the type of interdependence. The size of the nodes is determined by in-degree centrality scores in the network. The first diagram shows all ties with a mutual dependence greater than or equal to 2. The second diagram shows the same network but only the ties of mutual dependence greater than or equal to 6. The third and fourth diagrams show the network of power imbalances between partner organizations, with the former depicting power imbalance greater than or equal to 1 and the latter showing asymmetries greater than or equal to 2. Together, these observations reveal a network characterized by a core cluster of highly interdependent, central organizations, with fewer ties of mutual dependence to and between the more peripheral actors.

Results

Table 1 shows the means, standard deviations and correlations between all the variables. As expected, structural embeddedness has a statistically significant ($p < .01$) *positive* correlation with mutual dependence ($r = .18$) and collaborative success ($r = .16$). There is also a statistically significant ($p < .05$) *negative* correlation between relative centrality and collaborative success ($r = .11$). These zero-order correlations, however, do not control for confounding variables, so we must also examine regression models that include relevant controls.

Table 2 below presents 3 regression models based on 10,000 permutations. Model 1 includes only the control variables, Model 2 includes the independent variables, and Model 3 is the full model with both mediators included. The R-squared of Model 3 is .29, indicating improved explanatory power in the full model. Model 3 shows support for Hypotheses 1 to 3, but limited support for Hypothesis 4. The indirect effect of structural embeddedness acting through the mediating mechanism of mutual dependence is .05, an effect significant at $p < .001$. The coefficient for structural embeddedness reduces from .50 in Model 2 to .26 in Model 3 when mutual

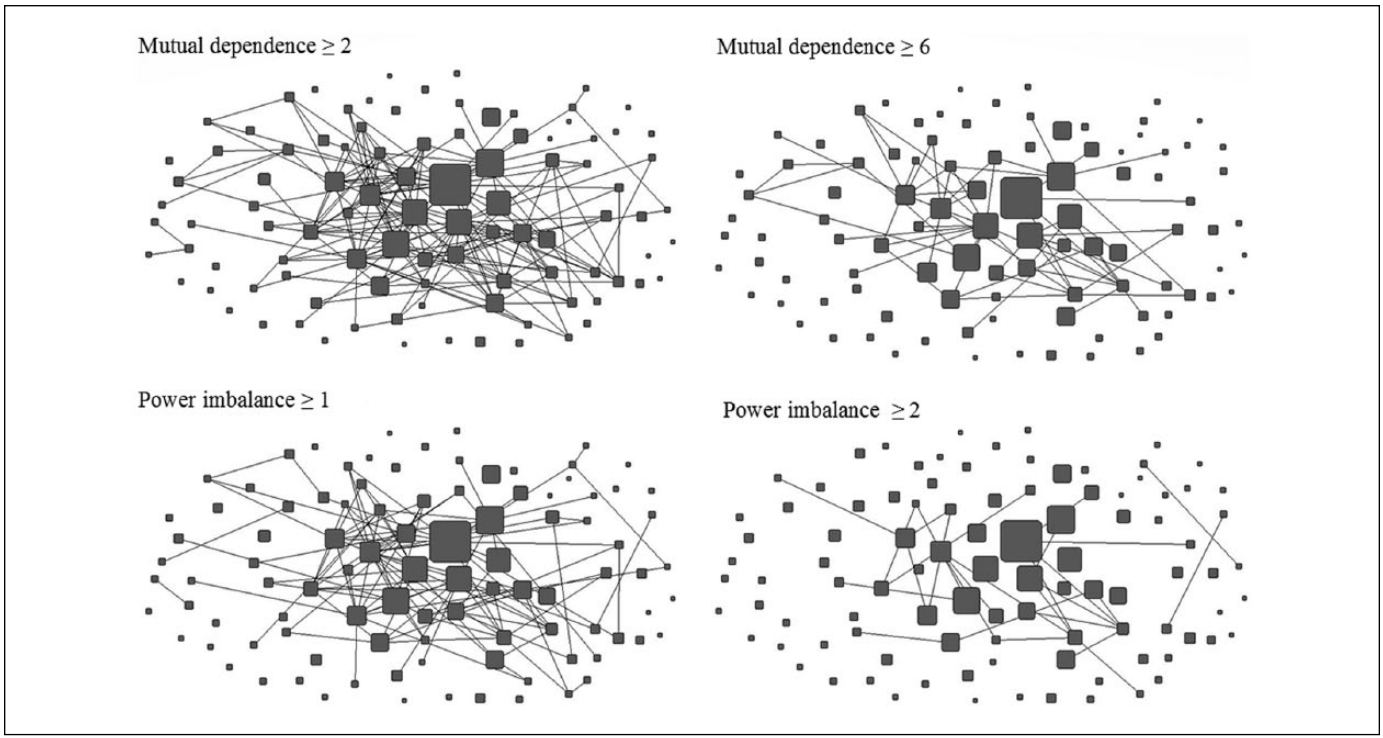

Figure 3. Network visualization.

Table 1. Descriptive Statistics and Quadratic Assignment Procedures Correlations.

		M	*SD*	1	2	3	4	5	6	7	8	9	10	11
1	Organizational size difference	28.68	65.9											
2	Organizational age difference	22.46	17.6	.07*										
3	Service area overlap	2.96	9.5	.02	−.03									
4	Service type overlap	3.37	2.96	.02	.09*	.01								
5	Service breadth	11.29	5.93	.02	−.01	−.01	−.27**							
6	Funding overlap	0.03	0.17	.05**	−.00	.18**	.12**	−.05						
7	Market power	3.77	1.76	.04	−.03	−.03	.12**	.33**	.09*					
8	Structural embeddedness	0.06	0.46	.02	−.04*	−.03*	.01	−.03	−.01	−.01				
9	Relative centrality	7.57	7.29	.03	−.01	.01	.02	.06	.01	.07	.00			
10	Mutual dependence	4.86	1.4	.07	.20*	−.10	.05	−.07	.07	−.15	.18*	.03		
11	Power imbalance	0.81	0.53	.02	.08	.01	.06	−.01	−.02	.07	−.06	.08	.01	
12	Collaborative success	0.91	0.79	.01	.07	−.18**	.02	−.14*	.01	.01	.16**	−.11	.37*	−.12

*$p < .05$. **$p < .01$.

Table 2. Multiple Regression Quadratic Assignment Procedure Regression.

	Collaborative success			
	1	2	3	Indirect effect
Organizational size difference	.02	.00	−.06*	
Organizational age difference	−.03	−.01	−.00	
Service area overlap	−.05**	−.03*	−.14***	
Service type overlap	−.02	−.03	−.06*	
Service breadth	−.04	−.04	−.04	
Funding overlap	.00	.00	−.02	
Market power	−.01	−.01	.06	
Structural embeddedness		.50***	.26***	
Relative centrality		.05	−.23***	
Mutual dependence			.25***	.05***
Power imbalance			−.03	.002*
R^2	.01	.26	.29	

Note. $N = 298$.
*$p < .05$. **$p < .01$. ***$p < .001$.

dependence is included. This provides statistical evidence of a partial mediation, supporting Hypothesis 2. However, we find marginal support that power imbalance mediates the relationship between relative centrality and collaborative success (indirect effect = .002 at $p = .055$).

Discussion

This study is the first to demonstrate how network characteristics impact interdependence and collaborative success between nonprofit EDOs participating in a rural collaboration network. We find that EDOs more positively evaluate collaborations characterized by higher levels of structural embeddedness, where their partners are also connected. We reason that heightened demand for coordination in economic development activities and the greater trust, shared norms, and mutual dependence engendered from shared indirect ties positively influences collaborative success. Indeed, our results provide evidence that mutual dependence serves as a critical mediator in the relationship between structural embeddedness and collaborative success. This finding suggests that greater levels of structural embeddedness can allow exchange partners to develop trusting relationships and social norms of cooperation that help them overcome resource dependence problems of opportunism and uncertainty.

With regard to relative centrality, our results reveal that managers provide higher ratings of collaborative success with structurally similar (i.e., in terms of network position) organizations. The greater the centrality differences between partners within the collaboration network, the less likely exchange organizations view

collaboration favorably. This finding contributes to recent research regarding homophilous preferences for partnerships in nonprofit contexts (Atouba & Shumate, 2015), and shows that structural homophily may also be beneficial *after* interorganizational relationship (IOR) formation. Surprisingly, we did not find convincing evidence that power imbalance mediates the relationship between relative centrality and collaborative success. This suggests that the bases of power in a collaboration network can be multifaceted, and the distribution of power context-dependent (Neal & Neal, 2011). As the network visualizations in Figure 3 reveal, this network is characterized by less power imbalance across the dyads.

Our theorizing and empirical findings have implications for future research. First, existing literature provides limited understanding of how social structure affects the dependence logic of RDT (Pfeffer & Salancik, 2003; Xia, Wang, Lin, Yang, & Li, 2018). By assessing whether structural effects can influence partnering organizations ability to meet their mutual interests through resource dependence constructs, this study contributes to a better understanding of the direct and indirect association between different forms of third-party relations and structural asymmetry on outcomes of exchange partners in the nonprofit context (Arya & Lin, 2007; Guo & Acar, 2005). In doing so, we answer a recent call for understanding the *processes* by which network features impact nonprofit collaboration outcomes (Gazley & Guo, 2015).

Second, we demonstrate the benefits of considering both dimensions of interdependence simultaneously. Much of prior work in RDT scholarship has primarily focused on power imbalance, its benefits for the more powerful actor, and the tactics used by the weaker actor to avoid misappropriation of its resources (e.g., Katila, Rosenberger, & Eisenhardt, 2008). Other studies in social psychology and social network research provide empirical evidence that the mutual dependence facet of interdependence also has consequential effects on the dynamics and outcomes of dyadic exchange (Murray, Holmes, & Griffin, 1996; Uzzi, 1997). Very few studies have examined both facets simultaneously (Casciaro & Piskorski, 2005; Gulati & Sytch, 2007).

Third, this study has methodological implications for RDT research by illustrating how social network methods can be used to measure interdependence. In contrast to past measurements of interdependence (e.g., Casciaro & Piskorski, 2005), we apply social network techniques (i.e., full roster method with piped questions about each relationship) to capture both dimensions of interdependence at the level of the partnership. Doing so not only offers more granular measurement of RDT's core theoretical construct, but empirically situates each partnership in the broader exchange system. As such, we encourage scholars to seek further theoretical *and* methodological synergy between RDT and SNT.

From a more practical standpoint, our findings have direct relevance for managers seeking to better manage their regional collaborations. Our findings suggest that EDO managers might benefit from "network weaving," seeking ways to reduce the structural holes (i.e., lack of connection between partners) in their networks (Krebs & Holley, 2006). Doing so could give them greater access to the network resource advantages of structural embeddedness (e.g., higher levels of trust, greater capacity for joint

action) that are of substantial value in their unique context. In addition, our results suggest that EDO managers should be mindful of their position within the larger collaborative network, since differences in network position can alter the functioning and outcomes of each of their collaborations.

Limitations and Future Research Directions

Our study has limitations that provide opportunities for future research. First, we focus on using network properties and the interdependence constructs to examine only one type of collaborative outcome, collaborative success. Although our measure captures the extent to which collaborations are efficient and successful, there are multiple types of other collaborative outcomes worth investigating. Future work might take our approach and move beyond explaining the formation and/or dissolution of ties and seek to explain other *ongoing* properties and outcomes of dyads (e.g., objective measures of joint value creation, levels of conflict, changes in collaboration frequency, etc.).

Second, our data focus on a single collaboration network within a unique geographic and socioeconomic rural region. This limits the generalizability of our findings to other rural areas. Nonetheless, given that urban issues have attracted the most scholarly attention, our study fills an important gap in the nonprofit literature. Although our findings are influenced by the setting, it is important to note that early in the urbanization process, the growth of urban counties came at the expense of rural areas. Today, growth of rural areas is increasingly being shaped by immigration to rural America and by attracting new businesses from urban areas. The increasing interdependence and convergence of many rural and urban places in developed economies mean that rural economies are no longer the opposite of urban society (Schaeffer, Kahsai, & Jackson, 2013). Hence, it is important to replicate our study to urban settings where we would also expect to find that greater relative centrality will lower collaborative success. For example, the work of Kwon, Feiock, and Bae (2014) in the regional planning context found that centrality of a regionally powerful organization deters interlocal cooperation for resource sharing. However, urban areas with an increasing population base, higher employment levels, and greater resources might result in an escalation of competition between economic development organizations. Hence, future work might discover that structural embeddedness has a weaker effect on collaborative success in urban locales.

Third, the network data examined in this study are limited in that they do not capture the extent to which two collaborating organizations perceive each other as competitors. A key motivation of this study is based on the question of how to manage the inherent tension between collaboration and competition in local economic development contexts (Feiock et al., 2012; I. W. Lee, Feiock, & Lee, 2012). However, our data do not include information on the extent to which two collaborating organizations also perceive each other as competitors. This limitation provides a promising opportunity for future research to measure ties of collaboration *and* competition to better elucidate the tension so prevalent in the local economic development arena.

Conclusion

Just as organizations are embedded in recurring patterns of exchange that impact their behavior and outcomes, collaborations are also situated in a larger network of dependencies. Structural features of the larger network not only affect the outcomes of a focal organization, but the processes and outcomes of a single partnership. Our results indicate that in the context of a rural nonprofit economic development network, a dyad's collaborative success is largely explained by its aggregate and relative dependencies. We find that structural embeddedness directly impacts collaborative success through the mediating mechanism of mutual dependence. However, our study finds no link between centrality differences and power imbalance, suggesting that particular dimension of interdependence may be less a function of network characteristics in our unique context. Together, our theory and findings highlight the synergistic lenses of RDT and SNT, and hopefully spark additional inquiry into this increasingly important yet understudied organizational population.

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