Relative Managerial Networking and Performance: The Moderating Role of Environmental Context

Abstract: This article examines how a dynamic view of managerial networking contributes to the cumulative knowledge of the study of managerial networking in the public sector. The current study contributes to our understanding of the relative influences of past and current networking relationships on current program performance by (1) exploring the nonlinear effects of relative levels of networking on performance and (2) investigating how relative networking influences may interact with organizational conditions characterized by different aspects of institutional and task environments. Employing a panel data set of U.S. local school districts from 1999 to 2015, the research finds that organizational performance improves at an increasing rate as the relative level of managerial networking increases and that the advantages of relative networking are leveraged more effectively when the organization meets its institutional requirements and when the environment is less complex, highly munificent, and highly turbulent.

Evidence for Practice
- When managers dramatically increase their involvement in networking relationships, they produce higher performance in general. This finding is consistent regardless of the type of managerial networking.
- However, managers should be aware of certain conditions in which the increase in managerial networking compared with the past can backfire.
- To build better organizational performance, managers need to increase the relative level of networking when the institutional requirement is met, but they should not increase the relative level of networking when the institutional requirement is unfulfilled.
- Managers’ choices to increase the relative level of networking can benefit the organization, particularly when complexity is low, munificence is high, and turbulence is high.

When implementing public programs and delivering public services, public managers operate in networked contexts involving multiple individuals and organizations and are required to have the capacity and competency to cope with uncertainties, ambiguous goals, limited resources, and political conflicts by increasing connections to enhance collaborative work (O’Toole and Meier 2011). Public managers are often expected to set the tone by being good collaborators, highlighting their efforts to increase collaborative opportunities for their organizations and to expand the network of alliances with a host of private bodies, other levels of government, and, increasingly, nonprofit agencies to deal with the operations and practices of public organizations (Agranoff 2007). Their social ties and connections with internal and external stakeholders become critical for gaining the necessary resources and information. Such externally oriented networking efforts, called “managerial networking,” can perform numerous functions, including but not limited to “building support, negotiating with others in an agency’s external environment, contributing to the management of multiorganizational efforts, exploiting opportunities, protecting the core organization from challenges or threats, and sometimes helping move a set of organizations toward an objective” (O’Toole 2015, 361).

Certainly, we find much to applaud in previous work on the impact of managerial networking on performance in the public (e.g., Avellaneda 2016; Jimenez 2017; Meier and O’Toole 2001; Van den Bekerom, Torenvlied, and Akkerman 2017), nonprofit (e.g., Johansen and LeRoux 2013; Li, Tang, and Lo 2018), and private sectors (e.g., Li and Zhang 2007). Despite these efforts, research has primarily taken a static view in examining the effect of current managerial networking on concurrent outcomes (Rho 2013b). Given that a prominent feature of network relationships is their dynamics (Gulati, Nohria, and Zaheer 2000; Rho 2013b), as their effects may diminish or grow over time (Soda, Usai, and Zaheer 2004), one aspect of managerial networking that is
worthy of closer examination is how managers’ relative involvement in past and current networking relationships influences current networking outcomes. In this context, this study is motivated by the need to look at how a dynamic view of managerial networking contributes to the cumulative knowledge of the study of managerial networking in the public sector.

This article improves our understanding of the relative influences of past and current networking relationships on current program performance by (1) exploring the effects of relative levels of networking on performance and (2) investigating how relative networking may interact with organizational conditions characterized by different aspects of institutional and task environments. The point of departure for this discussion is a broad theoretical approach, which offers detailed insights into the effect of relative managerial networking over time. Following this, we propose a set of contextual factors that may influence the relationship between relative managerial networking and performance.

We examine these issues in the longitudinal context of the performance of top managers’ networking involvement in local school districts in the United States, using the actual student performance of these districts as an objective networking outcome. The results of longitudinal analyses of networking behavior are presented based on a comprehensive panel data set of U.S. local school districts from 1999 to 2015. The remainder of the discussion integrates the findings into current knowledge of the field to fill the gap in the literature.

The Managerial Networking–Performance Relationship: Remaining Questions

We begin by giving an overview of research on the performance advantages of managerial networking in general before considering the contingency of time. The functionalist view of managerial networking focuses on its role as a means of tapping into opportunities within the environment or protecting the organization from external shocks (O’Toole and Meier 1999) and consequently links to the examination of the managerial networking–performance relationship. Over the past several decades, researchers have sought evidence of how public managers’ efforts to engage in networking relationships can enhance organizational performance in various settings. Most notably, as part of O’Toole and Meier’s theory of public management (O’Toole and Meier 1999, 2015), managerial networking has been empirically tested as a substantively important performance improvement in the context of U.S. local school districts not simply in a linear fashion but also in a nonlinear way with respect to other organizational resources (e.g., Hicklin, O’Toole, and Meier 2008; Meier and O’Toole 2001). The performance-enhancing aspects of managerial networking have been widely tested in different contexts and countries, including English local governments (Walker et al. 2010), Danish public education (Meier et al. 2015), Dutch local governments in the social care domain (Van der Heijden and Schalk 2018), Dutch primary schools (Van den Bekerom, Schalk, and Torenvlied 2017; Van den Bekerom, Torenvlied, and Akkerman 2016, 2017), municipalities in El Salvador (Avellaneda 2016), U.S. municipal governments (Jimeínez 2017), U.S. municipal police departments (Nicholson-Crotty and O’Toole 2004), American hospitals (Zhu 2016), and U.S. nonprofit human service organizations (Johansen and LeRoux 2013).

In a departure from earlier research on the benefits of networking relationships, researchers have recently turned to the negative consequences of networking behaviors. In studying the “dark side” of networks, O’Toole and Meier (2004) pointed out that managerial networking can boost educational performance in general, but such performance enhancement mainly benefits relatively advantaged clienteles rather than disadvantaged or marginalized ones. Jimenez (2017) found a concave-shaped relationship between managerial networking and fiscal health in U.S. cities, indicating that managers’ excessive externally oriented networking activities decrease city governments’ fiscal health. Some studies found no statistically significant relationship between networking and performance (e.g., Meier et al. 2015), which implies that such inconsistent empirical findings with regard to the effect of managerial networking on performance call for better conceptualization of the complex relationship between them.

To unpack this linkage, scholars have suggested different strategies. Some scholars tested a curvilinear relationship between networking and performance by adding a squared value of networking to the equation (Hicklin, O’Toole, and Meier 2008) or a networking quadratic term (Jimenez 2017). Other groups of scholars empirically studied how managerial networking–performance relationships are moderated by turbulence (Van den Bekerom, Torenvlied, and Akkerman 2016), red tape (Van den Bekerom, Torenvlied, and Akkerman 2017), or a natural disaster (Ryu and Johansen 2017). Meier et al. (2015) and Jimenez (2017) also explored how external environmental conditions influence the performance outcomes of networking behavior.

As part of efforts to explore the role of managerial networking on performance enhancement, scholars have specified the features of networking activities by taking a multidimensional approach. For instance, Meier and O’Toole (2005) proposed two dimensions of networking activities, local politics and professional networking relationships, and Rho (2013b) developed a two-factor solution to examine the determinants of managerial networking. In a similar fashion, Torenvlied et al. (2013) elaborated three dimensions of networking relationships—political support, bureaucratic coping, and coproduction—and their different effects on performance. Johansen and LeRoux (2013) also tested nonprofit organizations’ performance implication of two types of managerial networking: political networking and community networking. In the context of social services, Van der Heijden and Schalk (2018) categorized networking activities into professional networking and client-interest networking.

In spite of an abundance of work, however, several questions regarding managerial networking remain. First and foremost, the research on managerial networking is limited to static or cross-sectional snapshot investigations of the construct as a determinant of performance. Consequently, there is little empirical evidence of the dynamics of networking relationships over time and their implications for performance. However, as Soda, Usai, and Zaheer (2004, 893) noted, “time must pass for relationships to be cemented, strengthened, and become imbued with trust and affect,” and “current outcomes reflect the effects of enduring patterns of relationships.” From this perspective, through repeated interaction and communication over time, managers’ networking relationships...
tend to develop cumulatively, be path dependent, and build on prior experiences working with outside entities; therefore, current networking relationships need to be understood on the basis of the relative extent of networking activity over time. Using a dynamic panel analysis in which data were collected from the same district at different times, variations in managerial networking in different phases can be captured, and accordingly, a changing context over the periods can be addressed.

Second, such dynamic features of networking relationships may be constrained by environmental contingencies of organizations, as revealed in previous work on the managerial networking–performance relationship. Identifying conditions under which relative levels of networking behavior enhance or constrain performance represents an important research agenda.

In sum, while highlighting a dynamic feature of networking relationships, this study builds on scholarly efforts to enhance our understanding of managerial networking—testing the nonlinearity, interaction effects, and multiple dimensions of networking—but goes beyond analysis of the effect of managerial networking on performance in a cross-sectional setting. Instead, it takes a dynamic approach to elaborating our current knowledge about the managerial networking–performance agenda.

**Research Context: Managerial Networking in Local School Districts**

This study relies on the specific policy context of Texas local school districts. Before developing our hypotheses, in this section, we first describe the context in which our research takes place. In an earlier era, top managers in school districts, namely superintendents, were considered insulated actors because they interacted primarily with subordinates. This insulation, however, has been criticized in response to the need to consider community demands and changing economic, political, and social conditions (Kowalski 2013).

For several decades, school districts in the United States have operated under extensive changes in their social, political, economic, and legal environments. Accordingly, superintendents have faced a complex mix of contextual, societal, and institutional challenges, such as generally diminishing economic conditions, declining enrollment, decreasing federal and state aid, and increasing operating costs, mainly caused by growth in teachers’ salaries and instructional costs (Kowalski 2013). As school districts are interdependent with outside parties in such environmental contexts, a shift in the role of superintendents has occurred, from a top-down model emphasizing control, authority, and power to a relational model associated with mutually beneficial collaboration, two-way communication, and relationship building (Björk, Browne-Ferrigno, and Kowalski 2014; Kowalski et al. 2010).

Viewing school district operations as “conflict-ridden arenas in which competing interest groups influence the distribution of scarce resources” (Björk and Gurley 2005, 168), superintendents are expected to maintain an ongoing dialogue with multiple and diverse stakeholders, build coalitions with them, share authority, and engage others in making democratic decisions (Kowalski 2013). In situations of interdependence, superintendents appear to devote their time and managerial efforts to actively engaging in networked contexts for external support or institutional privilege (O’Toole and Meier 2011). In this vein, this study focuses on top managers’ (superintendents’) effort to engage in networking relationships and the performance implication within the environmental context.

**Relative Level of Managerial Networking and Performance**

Our point of departure for the current study is the notion that “the past preconditions the present and is responsible for its taken-for-granted nature; the future is embedded in the present in terms of expectations, possibilities, and strivings” (George and Jones 2000, 659). In other words, the nature and behavior of a currently observed phenomenon are grounded in what happened in the past and what is anticipated in the future, and therefore grasping the “embeddedness of the past and the future in the present” has important implications for organizational studies (George and Jones 2000, 660).

Somewhat consistent with these ideas in the theory of networks is Ring and Van de Ven’s (1994) dynamic viewpoint. Ring and Van de Ven (1994) argued that networking relationships are shaped and restructured through a continuous reevaluation process for deciding whom to contact next, to what extent to engage in such relationships, and what to gain from them (Ring and Van de Ven 1994). According to the perspective of organizational learning, organizations and their managers learn from past experience, and their accumulated knowledge and experience result in future organizational actions (Levitt and March 1988).

Applying this point to the networking activities of managers, existing networking relationships are the product of accumulated experiences and interpretations of past relationships (Levitt and March 1988; Soda, Usai, and Zaheer 2004). A manager may be inclined to contact external actors if the potential outcome that a relationship can provide is perceived as valuable. Thus, in trying to understand the relationships between managerial networking and organizational outcomes, it is important to ascertain not only the present but also the relevant aspects of the past. For instance, current networking behavior on the part of a manager may have different effects on organizational outcomes depending on how the manager behaved in the past. To incorporate time and temporality in the theory of managerial networking, the current networking relationship needs to be understood through its relative value to accumulated past experience of networking relationships. In this sense, we suggest the relative level of managerial networking is a proxy for the level of networking behavior relative to past networking experience.

When past and current networking relationships are compared, we can see what changes in networking patterns have occurred. Some managers may increase or decrease the extent of their engagement in networking relationships, while others may maintain similar patterns of interactions over time. On the other hand, managers may change their networking patterns at a certain time but keep their patterns at different times. These variations in networking behaviors can be understood through a closer look at the relative...
level of networking by comparing their past and current networking behaviors.

Relative networking does not simply mean a difference between the levels of managerial networking at time 1 and at time 2 (e.g., one year later). Considering that the networking pattern observed at time 2 is also connected to the past, past networking behavior needs to be considered as an accumulated pattern of behavior that has been constructed over time. Therefore, in trying to understand current networking as its relative value to accumulated past networking, we operationalize relative networking as the difference between the current volume of managerial networking and the averaged past volume of managerial networking using the following formula:

\[
RNET_t = NET_t - \frac{1}{t-1} \sum_{j=1}^{t-1} NET_j,
\]

where \( j = 1, \ldots, t-1 \), and \( NET_j \) represents the networking volume for district \( i \) at year \( t \). Thus, the first component (\( NET_t \)) captures the networking volume at year \( t \), and the second component \( \left\{ \frac{1}{t-1} \sum_{j=1}^{t-1} NET_j \right\} \) is the cumulative moving average (CMA), which is calculated by averaging all the networking volume until the previous year, \( t-1 \). Given that the CMA smooths out transitory (i.e., short-term) fluctuations and focuses on longer-term trends, relative networking (i.e., \( RNET_t \)) measures how much the current volume of managerial networking (i.e., \( NET_t \)) deviates from overall past networking behavior \( \{i.e., 1/(t-1)\sum_{j=1}^{t-1} NET_j\} \). No change in networking behavior means that “behavior continues to be guided by the same stable and familiar routines” (Becker et al. 2005, 776). By contrast, managers may alter their patterns of behavior to take advantage of new possibilities by expanding their partners or shrinking the extent of their involvement.

According to Soda, Usai, and Zaheer’s (2004) idea of “network memory,” the routines and operating procedures developed through repeated network relationships can promote a long-term relationship based on mutual trust. It also can diminish the probability of opportunistic and unethical behaviors and, in general, build up social capital. Therefore, “at high levels of closure over time, better understood, more trustworthy, and more efficient behaviors and routines come into play to enhance project performance” (Soda, Usai, and Zaheer 2004, 896). When repeated ties become stronger over time and more extensive, an increase in involvement in networking relationships may strengthen the stability of the accumulated interactive patterns across the entities, and the cooperative routines among them may be reinforced over time to enhance performance. Thus, managers who use routines to adjust their performance in response to prior outcomes and expand their routinized networking activities are likely to better absorb the collective knowledge generated in a network and ultimately enhance their performance at work. In particular, when managers dramatically increase their relative level of involvement in networking relationships compared with their past experience, their aggressive search for external opportunities will result in a noticeable improvement of organizational performance. In this sense, we hypothesize the nonlinear effect of relative networking on performance, proposing that performance increases at an increasing rate as relative networking size continues to rise:

**Hypothesis 1**: The relationship between the relative level of managerial networking (RNET) and organizational performance (OP) improves at an increasing rate.

**Moderating Role of Environmental Context**

The performance implications of the environmental context have been widely studied in the field of public administration (e.g., Johansen and Zhu 2014; Meier, Favero, and Compton 2016). To further our analysis of the performance implications of relative managerial networking, it is important to consider contingencies that might enhance (or weaken) the strength of this linkage. Our efforts are consonant with O’Toole and Meier’s revised model of public management, highlighting the idea that “context affects management by interacting with management and thus changes the relationship between management and performance” (O’Toole and Meier 2015, 252). To do so, this study employs a classic conceptual distinction between two types of organizational environments: institutional and task environments. While social approval and legitimacy are the most critical motives from the institutional environment perspective, the task environment perspective assumes that organizations are mainly motivated by economic concerns and exchanges to obtain critical resources and to reduce uncertainties (Scott 2003).

**Institutional Environment**

The institutional environment perspective relies on the primacy of rules, regulations, and inspections as mechanisms of environmental control over organizations (Meyer, Scott, and Deal 1981; Oliver 1997). In the setting of local school districts, top managers are charged with implementing many disparate elements of federal education policies (Cohn 2005), such as the No Child Left Behind Act of 2001 (NCLB), which was a prominent example of comprehensive federal intervention in local education. Under the accountability provisions of the NCLB, all public school districts, campuses, and the state were required to show that they were making adequate yearly progress (AYP) in the areas of reading/language arts, mathematics, and one other indicator—either graduation rate or attendance rate. AYP labeled schools, school districts, and states as successful (meets AYP) or failing (missed AYP), and schools failing to meet the standard faced a variety of consequences. The AYP standard was specific, objective, explicit, and highly visible, and the outcome had major consequences for the district; therefore, top managers in local school districts faced significant pressure to keep their organizations on track.

When organizations fully conform to institutional pressures and expectations, the legitimacy of those organizations can be augmented (Oliver 1997), and the acquisition of legitimacy helps them obtain and exchange resources through interactions with various constituents. In this sense, the positive relationship between the relative level of managerial networking and student performance in local school districts is expected to be stronger when the districts meet their institutional requirements.

In contrast, districts and schools not making AYP for at least two years were stigmatized as “in need of improvement,” and those that had not made AYP for five consecutive years were required to
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be restructured. Managers should address crises that befall critical stakeholders of districts because “an unfolding legitimacy crisis may also sever managers from previously reliable external allies” (Suchman 1995, 597). Suchman (1995, 597) reified the challenge of legitimacy crisis and its impact as follows: “Indeed, legitimation crises tend to become self-reinforcing feedback loops, as social networks recoil to avoid guilt by association. At the most concrete level, this retraction of support can exacerbate performance failures simply by disrupting critical resource flows.” Thus, for managers facing a legitimacy crisis that may coalesce around performance issues, the first action is to address the immediate disruption before extending their efforts to reach out to external allies or initiating any other legitimacy-building strategies. Thus, when failing to meet the AYP criteria, superintendents are expected to put instruction at the top of the district’s agenda, and their job’s managerial and political dimensions should be aligned with the overriding goal of continuous instructional improvement. For these reasons, we propose that a failing status of this institutional requirement may weaken the relative networking–performance relationship.

**Hypothesis 2**: AYP status positively moderates the relationship between RNET and OP such that the fulfilled AYP criteria strengthen their positive association.

**Task Environment**

Population ecology and resource dependence theories highlight the role of the task environment in explaining managerial strategies and behaviors in organizations or populations of organizations. Through the process of making available or withholding resources, the task environment can affect an organization’s efficacy in obtaining resources for its goal attainment and goal setting (Aldrich 1979). As part of efforts to conceptualize and measure the task environment, this study accounts for Dess and Beard’s (1984) three overarching constructs: complexity, munificence, and turbulence.

Complexity defines the extent to which an organization’s operating environment is heterogeneous/homogenous (Andrews 2009; O’Toole and Meier 2015). Increases in the level of complexity lead to greater perceived uncertainty for managers responsible for coping with unexpected situations caused by complex demands. According to Keats and Hitt (1988, 579), indicators of complexity reflect “a consideration of the number, diversity, and distribution of task-environment elements,” and its variations influence organizational processing requirements. Public organizations serve diverse and often geographically dispersed groups of clients, customers, and service users, and complexity in the public sector is understood in terms of the characteristics of the service recipients (Andrews 2009). In this way, complexity in local school districts can be operationalized as diverse characteristics of organizations’ primary service recipients—students.

Student demographics are quickly changing across the United States. According to the Texas Education Agency, as of the 2017–18 school year, African American students represented 12.6 percent of the total student population, Hispanic students represented 52.4 percent, and White students represented 27.9 percent. Additionally, 58.7 percent of students were economically disadvantaged, and 18.8 percent were English learners. The presence of numerous subgroups in public school districts and the existence of some balance among them through similarity of size require managers to deal with vigorous infighting among them. Moreover, closing the achievement gap and building cultural proficiency in diverse school districts has become a primary goal and responsibility of the superintendent (Lindsey, Roberts, and CampbellJones 2013). Therefore, the high level of complexity in subgroup compositions and the intricacy of their interrelations may force managers to instead focus the internal management functions to achieve organizational goals by enlightening a vision to bridge the achievement gap and overcome resistance to change with staff members through building trust (Wright and Harris 2010). Therefore, in situations of high complexity, the positive effect of managers’ increasing effort in reaching outside the organization may be diminished, or their relatively high involvement in external networking compared with the past may even cause a reverse effect on performance.

On the other hand, managers working with highly concentrated or homogenous subgroups can impose consistent discipline and easily play a coordinative role (Keats and Hitt 1988). Therefore, managers are less likely to pay attention to information processing requirements for complex elements of the organization and are able to put additional effort toward engaging in external networking as a means of attaining organizational goals. Thus, managers may seek some degree of rationality to cope with the complex situation with which they are confronted by adjusting the level of interactions with external parties.

**Hypothesis 3**: Complexity negatively moderates the relationship between RNET and OP such that high complexity weakens their positive association.

Environmental munificence refers to the scarcity or abundance of critical resources needed by organizations operating within an environmental context (O’Toole and Meier 2015). The role of resource availability is critical for determining organizational success or failure (Aldrich 1979). While organizations in a highly munificent environment can afford to expand service provision, hire better-quality staff, and promote resources that can support growth, organizations facing a scarcity of critical resources are likely to confront restrictions on managers’ responsiveness, effectiveness, and discretion regarding providing public services (Andrews 2009; Andrews and Johansen 2012). In this vein, resource availability can affect the extent of managerial networking and changes in it by either constraining or facilitating action. A more munificent organizational environment allows managers to externally exploit environmental opportunities because opportunities are often related to a greater sense of control (Jackson and Dutton 1988) and a better chance to make salient the potential gains rather than the risks (March and Shapira 1987).

When munificence decreases, as associated with the threat-rigidity hypothesis (Staw, Sandelands, and Dutton 1981), managers’ concerns about inefficiency and negative outcomes may be intensified as perceptions of threats increase. In this way, managers are more likely to turn their attention to issues internal to organizations, such as cost cutting and budget tightening, instead of taking externally oriented actions (Chattopadhyay, Glick, and Huber 2001). In this sense, O’Toole and Meier (2015) proposed that a positive relationship between managerial
networking and performance will be strengthened in more munificent environmental contexts in which managers can tap abundant external resources to enhance performance. Likewise, the positive influence of the relative level of managerial networking on performance is stronger when the organizations have more available resources.

Hypothesis 4: Munificence positively moderates the relationship between RNET and OP, such that high munificence strengthens their positive association.

Turbulence, defined as the extent to which a manager faces an unpredictable and unstable environment, characterizes public organizations (Aldrich 1979). In an educational setting, turbulence is often interpreted as unexpected environmental shocks, and unpredictable budget cuts are one of the most notable examples (Meier and O’Toole 2009; Rho 2013a). If a budget cut is signaled well before its implementation, managers may be able to minimize its impact on organizational performance in a timely fashion; however, if shifts in budget situations are unpredictable, managers cannot rely on their knowledge, experiences, and practices and the negative impact may be intensified (Boyne and Meier 2009). Therefore, the most critical element of environmental turbulence is its unpredictability.

For example, in 2006, Texas lawmakers passed a property tax reform package that reduced the school maintenance and operations tax rate, which funded operational costs, by one-third. In 2011, facing a lagging economy and massive budget deficit, Texas’s 82nd Legislature made historic cuts to the public education budget totaling $5.4 billion. In response to such unexpected budget shocks, school districts employed various strategies to cope with the unpredictability of change by reducing expenditures, containing costs, and searching for additional revenue. In a turbulent environment in which the organizational setting does not provide reliable information, instability and uncertainty create means-ends ambiguity and managerial discretion increases (Hambrick 2007). Such enhanced discretion allows top managers to influence organizational performance more strongly, and managers’ efforts to highly engage in external networking activities play more pivotal roles in exploiting opportunities and buffering impediments to program performance (Meier and O’Toole 2009).

Hypothesis 5: Turbulence positively moderates the relationship between RNET and OP, such that high turbulence strengthens their positive association.

Methods

Data

A series of Texas School District Superintendent Management Surveys served as the primary data source for the analysis. Meier and O’Toole conducted a series of superintendent management surveys to collect information about the management style, goals, time allocation, and leadership of the superintendent in each district. The 2000 survey generated 541 usable responses (response rate of about 55 percent); the 2002 survey had 621 respondents (64 percent); the 2005 survey had 657 respondents (64 percent); the 2007 survey generated 678 responses (66 percent); the 2009 survey had a 58 percent response rate; the 2011 survey had a 54.2 percent response rate; and the most recent survey collected in 2014 had a 43.7 percent response rate. The data set was supplemented with a district-level existing data set encompassing a wide range of indicators about performance, demographics, financial resources, and other factors. The nonsurvey data were drawn from the more than 1,000 Texas school districts for 1999–2015 from the Texas Education Agency.

Measures

Although the school district might have multiple goals and performance indicators, the primary and ultimate goal of public education is related to student performance. In Texas, the statewide standardized test—the Texas Assessment of Academic Skills (TAAS) from 1991 to 2002, the Texas Assessment of Knowledge and Skills (TAKS) from 2003 until 2011, and the State of Texas Assessments of Academic Readiness (STAAR) since 2011—has been broadly used to evaluate the performance of districts and schools. The TAAS/TAKS/STAAR is a standardized criterion-based test that all students in grades 3 through 8 and grade 11 must take to assess their attainment of reading, writing, math, science, and social studies skills. The performance measure used in this study included the percentage of students in a district who passed all sections (reading, writing, and mathematics) of the test.¹ We used the natural logarithms of the performance measure because their distribution is positively skewed.

Networking activity refers to the extensiveness of a top manager’s networking involvement.² Relative networking was operationalized using the difference between the current volume of managerial networking and the averaged past volume of managerial networking. For the networking measurement, the surveys asked superintendents to report their networking frequency specific to each networking node, defined as more than daily, more than once a week, weekly, yearly, or never. The set of networking nodes varied across the surveys, so to be consistent, the focus of this study was on a set of nodes repeatedly reported in all sets of surveys, including local business leaders, state legislators, the state educational agency, federal educational officials, parent groups, and teachers’ associations. We used a scaling index based on factor scores most frequently used in studies on managerial networking in Texas school districts (e.g., Meier and O’Toole 2001) and created a single composite measure of relative networking.³

The institutional environmental condition—the effect of a federal education policy (i.e., the NCLB Act)—was measured using AYP status, with each district assigned one of three criteria: “Meets AYP,” “Missed AYP,” and “Not Evaluated AYP.” A dummy variable was created for AYP status, receiving a value of 1 if the district met AYP, otherwise 0.

Complexity in school districts is concerned with primary service recipients’ racial diversity, income inequality, and language diversity in education that create challenges for school management and student performance improvement. Complexity was measured using the percentage of each minority student group (African American, Hispanic, and other racial group), the percentage of students enrolled in bilingual/special language
education programs, and the percentage of low-income students as an indicator of the general income of the populace. An overall complexity measure was created by performing a principal component analysis with a higher factor score indicating a greater level of complexity.

Munificence indicates the resources available within the environment; a context-specific measure of munificence primarily focused on variables related to public education funding sources: the amount of total revenue per pupil (logged) controlled for district size, the tax rate as an indicator of the district’s available local resources, the total enrollment (logged) as a major factor determining revenue allocations, and the level of state funding school districts are entitled to receive. An overall munificence measure was created by performing a principal components analysis with a higher factor score indicating a greater level of munificence.

Turbulence focuses on unexpected budget shock, which is calculated as

\[ y_{t+1} = \mu + \Theta y_t + \varepsilon_{t+1}, \]

where \( \mu \) indicates the global mean and \( \varepsilon_{t+1} \) is the forecasting error. To forecast the total revenue, we used a linear combination of its global mean and lagged value. This model describes the natural time-variant process of total revenue. The autoregressive model specifies that the output variable depends linearly on its own previous values and also on a stochastic term. Therefore, the estimated error \( (\hat{\varepsilon}_{t+1} = y_{n+1} - \hat{y}_{n+1}) \) from the equation represents the deviation from the global mean and the past behavior of a time sequence; as such, a higher estimated error indicates a more unusual event compared with the past. More importantly, to estimate the deviation \( \hat{\varepsilon}_{n+1} = y_{n+1} - \hat{y}_{n+1} \), we had to obtain the current revenue \( (y_{n+1}) \), which we did not know until time \( t+1 \), and the predicted value from the current \( (\hat{\mu} + \Theta y_t = \hat{y}_t) \). Based on the forecasting framework, deviations from current revenue cannot be expected at any of the previous time points. In this scheme, forecasting is the process of making predictions for the future based on present circumstances (Boyd 1990).

Control variables included superintendent succession, which was dummy-coded as 1 when a succession event occurred in the district; the tenure of the top manager was measured using the number of years the superintendent had been in that specific position, average teacher salary, class size (student-teacher ratio), and average teacher experience. Descriptive statistics and correlations for the predictor variables appear in table 1.

### Analysis
Organizational performance is likely to be produced by an autoregressive process. In this study, we considered the lagged dependent variable (LDV) model to control for organizational history (Oberfield 2014; Pasha 2018). As an identification strategy, we relied on the generalized method of moments (GMM) to estimate the lagged dependent models (Hansen 1982) because the LDVs are correlated with individual-specific effects, and thus conventional ordinary least squares estimation of the dynamic model would give upward biased results (Anderson and Hsiao 1981, 1982).

In this study, we used the system of GMM suggested by Arellano and Bond (1991). The system of GMM estimation is a linear dynamic panel data model that contains lags of the dependent variables as predictors and includes unobserved individual measurement level effects. GMM is an attractive dynamic panel data estimation approach (Baltagi 2008) for analyzing district-fixed effects when LDVs display time persistence, as is likely with our measures of organizational performance. The GMM panel estimator also improves on population-averaged estimators because it directly accounts for the potential bias induced by the omission of district-specific effects and endogeneity (omitted variable).

One challenge with this GMM approach is that it may suffer from instrument proliferation caused by an increased number of moment conditions with the dimension of the time series and the dimension of the vector of explanatory variables. To mitigate this issue, we limited the lag length up to \( t-5 \) in the instrument set to reduce the instrument count (Roodman 2009); we did not use all available moment restrictions because adjacent lags are more likely to be informative instruments than very remote lags.

Standard diagnostic statistics were conducted to check model specifications. The Sargan statistic implied that the test of overidentifying restrictions cannot reject its null hypothesis; therefore, the test led us to retain the validity of the instruments in this study \( (p = .720, \text{model 1}; p = .349, \text{model 2 in table 2}).

### Findings
Table 2 details the coefficients of both the main effect and the interaction effect models in this research. Model 1 tested the main effect of the key independent variable and relative levels of networking, including control variables. Model 2 included all the control and moderating variables.

Hypothesis 1 was tested with model 1 in table 2. The result supported the predicted relationship between relative networking.

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### Table 1 Descriptive Statistics and Correlations

<table>
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<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<tbody>
<tr>
<td>1. Log(APSS)</td>
<td>71.78</td>
<td>14.92</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2. Relative networking</td>
<td>-0.03</td>
<td>0.78</td>
<td>-0.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Adequate yearly progress</td>
<td>0.72</td>
<td>0.44</td>
<td>0.10</td>
<td>0.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Complexity</td>
<td>-0.01</td>
<td>0.97</td>
<td>-0.36</td>
<td>-0.03</td>
<td>-0.23</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5. Munificence</td>
<td>0.03</td>
<td>1.03</td>
<td>0.01</td>
<td>-0.01</td>
<td>-0.13</td>
<td>0.19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Turbulence</td>
<td>-0.15</td>
<td>1.44</td>
<td>-0.08</td>
<td>0.03</td>
<td>0.26</td>
<td>-0.17</td>
<td>-0.69</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>7. Superintendent succession</td>
<td>0.22</td>
<td>0.41</td>
<td>-0.03</td>
<td>-0.05</td>
<td>-0.05</td>
<td>0.05</td>
<td>0.004</td>
<td>0.001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Superintendent tenure</td>
<td>5.16</td>
<td>4.75</td>
<td>0.09</td>
<td>-0.004</td>
<td>0.04</td>
<td>-0.06</td>
<td>-0.03</td>
<td>0.03</td>
<td>-0.42</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Teachers’ salary</td>
<td>40,882.18</td>
<td>5,344.12</td>
<td>0.37</td>
<td>-0.17</td>
<td>-0.28</td>
<td>0.11</td>
<td>0.32</td>
<td>-0.54</td>
<td>0.01</td>
<td>0.01</td>
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<td></td>
</tr>
<tr>
<td>10. Class size</td>
<td>12.75</td>
<td>2.95</td>
<td>-0.07</td>
<td>-0.01</td>
<td>-0.19</td>
<td>0.14</td>
<td>0.34</td>
<td>-0.57</td>
<td>0.007</td>
<td>-0.01</td>
<td>0.24</td>
<td></td>
</tr>
<tr>
<td>11. Teachers’ experience</td>
<td>11.86</td>
<td>3.17</td>
<td>0.28</td>
<td>-0.02</td>
<td>0.07</td>
<td>-0.23</td>
<td>-0.07</td>
<td>0.03</td>
<td>-0.01</td>
<td>0.01</td>
<td>0.22</td>
<td>-0.28</td>
</tr>
</tbody>
</table>

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Relative Managerial Networking and Performance
and performance ($\beta = 0.001, p < .05$, the linear term; $\beta = 0.002, p < .01$, the quadratic term). As seen in figure 1, the relationship between relative networking and organizational performance is quadratic. More specifically, when managers increased the level of managerial networking by 25 percent or more compared with the averaged prior networking, organizational performance improved at an increasing rate compared with when they maintained a consistent level. Performance improved further with big rather than small differences in the level of managerial networking. Taken together, the relationship between the relative level of managerial networking and overall student performance improved at an increasing rate.\(^{4}\)

Table 2 The Effect of Relative Networking on Performance and the Moderating Effect of Environmental Factors between Relative Networking and Performance

<table>
<thead>
<tr>
<th>DV = Student Exam Pass Rate</th>
<th>Main Effect (\beta)</th>
<th>Interaction Effect (\beta)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lagged DV</td>
<td>0.716** (0.005)</td>
<td>0.553** (0.003)</td>
</tr>
<tr>
<td><strong>Lagged DV Main effect</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative level of networking (RNET)</td>
<td>0.001* (0.0005)</td>
<td>0.0006 (0.0007)</td>
</tr>
<tr>
<td>Relative level of networking (^2) (RNET(^2))</td>
<td>0.002** (0.0002)</td>
<td>-0.0005 (0.0004)</td>
</tr>
<tr>
<td><strong>Lagged DV Interaction effect</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RNET x AYP</td>
<td>-0.002** (0.0009)</td>
<td></td>
</tr>
<tr>
<td>RNET x AYP</td>
<td>-0.001 (0.001)</td>
<td></td>
</tr>
<tr>
<td>RNET x COMP</td>
<td>-0.005** (0.0006)</td>
<td></td>
</tr>
<tr>
<td>RNET x COMP</td>
<td>-0.001** (0.0003)</td>
<td></td>
</tr>
<tr>
<td>RNET x MUN</td>
<td>+0.001** (0.0004)</td>
<td></td>
</tr>
<tr>
<td>RNET x MUN</td>
<td>+0.001** (0.0003)</td>
<td></td>
</tr>
<tr>
<td>RNET x TUR</td>
<td>0.0007 (0.0004)</td>
<td></td>
</tr>
<tr>
<td>RNET(^2) x TUR</td>
<td>0.002** (0.0003)</td>
<td></td>
</tr>
<tr>
<td><strong>Controls</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Superintendent succession</td>
<td>-0.008** (0.001)</td>
<td>-0.002** (0.0004)</td>
</tr>
<tr>
<td>Superintendent tenure</td>
<td>0.00004 (0.0001)</td>
<td>0.0005** (0.0001)</td>
</tr>
<tr>
<td>Teachers’ salary (thousands)</td>
<td>0.026** (0.001)</td>
<td>0.005** (0.001)</td>
</tr>
<tr>
<td>Class size (student-teacher ratio)</td>
<td>-0.004* (0.0003)</td>
<td>-0.006** (0.0002)</td>
</tr>
<tr>
<td>Teachers’ experience (year)</td>
<td>8.7x10^-7 (0.001)</td>
<td>8.008** (0.0007)</td>
</tr>
<tr>
<td>Year dummies</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Number of districts (N)</strong></td>
<td>1,135</td>
<td>1,118</td>
</tr>
<tr>
<td>Observations ((N\times T))</td>
<td>14,342</td>
<td>12,550</td>
</tr>
<tr>
<td>Number of instruments</td>
<td>318</td>
<td>756</td>
</tr>
<tr>
<td>Sargan test p-value</td>
<td>0.720</td>
<td>0.349</td>
</tr>
<tr>
<td>Wald test</td>
<td>28,024.7***</td>
<td>6.72x10^{6}***</td>
</tr>
</tbody>
</table>

Notes: DV = dependent variable; RNET = relative networking size; RNET\(^2\) = quadratic term of the relative networking size; COMP = complexity; TUR = turbulence; MUN = munificence.

**p < .01; *p < .05.

Moderation hypotheses 2–4 were tested using the full specification (model 2 in table 2). Fairly significant moderating effects on the relationship between relative networking and organizational performance were observed when environmental factors were introduced in the model. The result supported hypothesis 2, which predicted that the relative networking–performance relationship would vary according to AYP status. A significant effect was observed on the interaction term between relative networking and AYP ($\beta = 0.002, p < .01$, the linear interaction term). The result also supported hypothesis 3, which predicted that the relative networking–performance relationship would vary according to complexity ($\beta = -0.005, p < .01$, the linear interaction term; $\beta = -0.001, p < .01$, the quadratic interaction term).

The result was similar for hypothesis 4, which predicted that the relative networking–performance relationship would vary according to environmental munificence, as there was a significant effect on the interaction term ($\beta = 0.001, p < .01$, the linear interaction term; $\beta = 0.001, p < .01$, the quadratic interaction term). Finally, the result supported hypothesis 5, which predicted the interaction effect between relative networking and turbulence ($\beta = 0.002, p < .01$, the quadratic interaction term).

To illustrate the patterns of the significant moderating effects that supported the hypotheses, we plotted the significant (at $p < .05$) interaction effects with 25 percent above and below the mean to present high and low levels of the moderating variables, respectively, using the coefficients in model 2. The moderation plots for the hypotheses are shown in figures 2–4.

Figure 1 Nonlinear Relationship between Relative Networking and Performance

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Figure 2 Moderating Effect of Institutional Environment (AYP Status) on the Relationship between Relative Networking and Organizational Performance

Figure 3 Moderating Effect of Organizational Complexity on the Relationship between Relative Networking and Organizational Performance

Figure 2 shows a positive association between relative networking and performance when organizations met the AYP standards and that overall performance was lower for organizations that failed to meet them. Furthermore, when organizations failed to meet the AYP standards, increases in the relative level of networking were not positively associated with the student exam pass rate. As shown in figure 3, the relationship between organizational performance and relative networking improved at an increasing rate when complexity was low, while it declined at a decreasing rate when it was high. When complexity was high, if relative networking increased from “no change” by 25 percent, the student exam pass rate decreased significantly; conversely, when it was low, student performance significantly improved if top managers increased their relative networking involvement by 25 percent. Furthermore, overall student performance in organizations with low complexity was higher than in those with high complexity.

Figure 4 shows that the relative networking–performance relationship improved at an increasing rate when environmental munificence was high, while there was an inverted U-shaped pattern when it was low. When munificence was high, if relative networking increased from “no change” by 25 percent, the student exam pass rate increased significantly; conversely, when it was low, if relative networking increased from “no change” by 25 percent, the exam pass rate decreased significantly. Figure 5 presents an inverted U-shaped pattern between organizational performance and relative
networking when organization turbulence was low. Overall student performance in organizations with low turbulence was higher than in organizations with high turbulence.

**Discussion and Conclusion**

As a key contribution, the current research demonstrates the important value of time by incorporating time into the concept of managerial networking and investigating the performance implication of relative networking. The literature on managerial networking has focused primarily on a static cross-sectional research design, as is commonly found in the public management literature (Oberfield 2014), neglecting the fact that rather than being static over time, managers’ networking behaviors can be changed (Rho 2013b; Ring and Van de Ven 1994). The current research fills this critical gap in the literature by proposing and demonstrating the unique value of the time-bounded aspect of relative networking. We proposed that current networking behavior should be understood as the relative value of accumulated past networking. Considering time in theories of managerial networking may significantly enhance our understanding of the nature and consequences of managerial behavior involved in external networking relationships. Indeed, the findings from the longitudinal study support the positive relationship between relative networking and performance. In line with the wealth of literature on managerial networking, we do not dispute the clear findings that managerial networking plays a positive role in improving organizational
performance. Instead, we reorient the literature and argue that the current networking relationships need to be understood on the basis of the relative extent of networking activity over time.

Another unique feature of the current study is the inclusion of institutional and task environment as important contingencies for the influence of relative networking on organizational performance. In terms of institutional environment, the results suggest that when organizations fail to meet the institutional requirement, the positive relative networking–performance relationship is weakened. According to the institutional environment perspective, every organization is expected to respond to various institutional pressures and demands embodied in regulations, norms, laws, and social expectations (Meyer, Scott, and Deal 1981). The AYP requirement under the NCLB emphasized corrective actions for low-performing schools by mandating various school improvement requirements, such as offering school choice and supplemental education services. Such institutional pressures have heightened superintendents’ instructional role, requiring an in-depth understanding of instructional strategies, coaching techniques, and use of data for better decision-making. Considering that time spent for external networking is time taken away for other management activities (Hicklin, O’Toole, and Meier 2008; Jimenez 2017), the increase in the volume of external networking compared with the past does not benefit the organization. Instead, managers working in underperforming organizations need to undertake internal management functions and improve internal efficiencies to cope with a legitimacy crisis resulting from low performance. It is consonant with our findings that any attempt to change the level of networking involvement is associated with a decline in performance.

Per a moderating role of complexity, it is found that the positive relationship between relative networking and performance is stronger when the composition of service recipients is homogenous (low complexity). Homogenous groups are likely to be more cohesive and produce greater conformity toward the organizational goals (Shaw and Shaw 1962). In this vein, the positive impact of relative networking on performance can be intensified under low complexity. In contrast, competing agendas and weak ties in highly heterogeneous (high complexity) groups of service recipients may lead managers to concentrate on internal management and allay any possible concerns related to the diverse interests of different compositions of subgroups rather than on initiating external connections. Therefore, the performance-related effect of managers’ relatively high involvement in external networking compared with the past may be weakened.

We also illustrated the joint effect of relative managerial networking and munificence on the organizational performance measure, and the relative networking–performance relationship varied in form according to the level of munificence. As predicted, the positive influence of relative networking on performance is stronger when the organizations have more available resources. When munificence is low, an inverted U-shaped pattern between relative networking and performance is observed. This finding is in line with the threat-rigidity hypothesis (Staw, Sandelands, and Dutton 1981), contending that resource scarcity intensifies threat-perceptions and leads managers to focus on increasing internal efficiency.

In a similar fashion, the results also revealed that in a highly turbulent context, relative networking may increase organizational performance as relative networking moves from moderate to high levels. In highly turbulent environments, the nature of managerial work becomes more varied and fragmented (Mintzberg 1973) and managers are expected to process a greater amount of information to achieve a given level of performance (Galbraith 1973). Hence, faced with unexpected and externally imposed rapid changes, managers need to cope with the added unpredictability of the environment by relying more on external assistance. Moreover, organizations in less turbulent environments cannot benefit from increasing the level of relative networking.

Like all empirical research, this study has several limitations one needs to bear in mind while interpreting the results. First, measurement issues are problematic in the study of managerial networking (O’Toole and Meier 2011). Relying as we did on a quantitative survey methodology to measure the extensiveness or volume of networking activities, we do not have further information on why managers engaged in the networking activities, what made them change their extent of involvement, and whether they intentionally and strategically changed their networking activities over time. Thus, instead of a closer look at the functions, tasks, and roles of each networking activity, our measure taps into managerial networking from the extensive perspective, focusing on the level of using personal ties with other external entities (Luo 2003). Developing a richer understanding of the interplay between the quality or usefulness of information shared among networked actors, managers’ ability to improve organizational performance, and outcomes in an interorganizational context is essential to advancing this model of networking dynamics. Qualitative data would be particularly useful for documenting and further refining the mechanisms proposed in this study. Despite this limitation, it should be noted that this perspective has the advantage of indicating how actively top managers use their managerial ties for fulfilling organizational goals and, in particular, tracking how the level of extensiveness has changed over time.

Second, the sample was limited to a specific policy domain—public education—and U.S. local school districts, thereby potentially limiting its generalizability to other policy areas and service organizations. However, local school districts are one of the most highly professionalized and generally decentralized common public organizations, and such characteristics are commonly shared with other types of public organizations (O’Toole and Meier 2011). Considering that similar organizations in a public education domain exist in other countries, other authors have applied O’Toole and Meier’s public management model and their measures of managerial networking to public education in other countries (e.g., Van den Bekerom, Toerien, and Akkerman 2016, 2017). O’Toole and Meier’s model and their empirical research using Texas school district data have been widely replicated in different contexts. Therefore, despite the limited scope of the data, we should note the high and increasing value of the Texas school district data set. The large size of the longitudinal data set—more than 1,000 cases each year—on the same organizations over a 15-year period allowed us to address questions of time-bounded networking effects, various interaction effects, and causality issues, without being limited by collinearity (O’Toole and Meier 2011). Moreover, the data
set contains multiple measures of management components and performance as well as extensive controls that allowed us to build a comprehensive model.

Third, our study did not control for potential political and economic contextual effects that may affect both the independent and dependent variables, causing omitted variable bias (Wooldridge 2002). Likewise, it did not exhaust the list of potential managerial factors, such as superintendents’ public service motivation, performance orientation, or other leadership qualities that might be omitted variables that could explain both relative networking and school performance. Future research might study those variables as situational moderators as well. Finally, our operationalization of time contingency focused mostly on the relative level of managerial networking. A broader and more comprehensive conceptualization and operationalization can provide a fuller understanding of the time contingency of the networking–performance relationship.

The results of the current study have a number of significant implications for future research. First, we recommend future research that delineates how an innovative organizational culture can influence the performance implication of the relative level of managerial networking compared with past experiences. For instance, innovative organizations can promote a culture of democratic communication, flexibility of management processes, and collaboration across organizational boundaries in that an innovative culture may stimulate managers to change their involvement in external networking, which, in turn, could intensify its impact on organizational outcomes. Another fertile area for future research pertains to individual, interpersonal, and organizational factors that may explain changes in managerial networking. Moreover, the relative managerial networking–performance relationship is context specific. Development of both theoretical understanding and managerial implications depends very much on identifying various contextual factors that enhance a positive relationship between relative managerial networking and organizational performance.

In line with our results, public management attention should be directed toward enhancing the managerial practices of engaging in external networking relationships. Public organizations can capitalize on our finding in that when managers dramatically increase their involvement in networking relationships compared with the past, they produce higher performance in general. This finding is consistent regardless of the type of managerial networking. However, the marginal utility of relative networking highly depends on the volume of prior networking, as shown in the post hoc analysis. In other words, the return to relative networking in the present is smaller for a manager who has networked a lot in the past than for a manager who has engaged in a low level of networking in the past. These findings provided empirical motivation for studying environmental moderators. We believe these moderating effects will help us know when the ideal condition for increasing the relative networking occurs.

Our findings on the interaction effects draw attention to managers’ strategic responses to different organizational contexts. Specifically, to build better organizational performance, managers need to increase the relative level of networking when the institutional requirement is met, but they should not increase the relative level of networking when the institutional requirement is unfulfilled. Managers’ choices to increase the relative level of networking will benefit the organization, particularly when complexity is low, munificence is high, and turbulence is high. On the other hand, managers should not increase the relative level of networking when the environment is highly complex, less munificent, and less turbulent. Such results of the moderating effects reinforce the notion that managerial strategic choices matter more in certain types of environments than in others (Hrebiniak and Joyce 1985).

In conclusion, the current study is among the first efforts to advance the literature on managerial networking by accounting for time, which is inherently embedded in public management theory and practice (Oberfield 2014). Luther Gulick, in his essay on time and public administration published in Public Administration Review, argued that “time must become a central strategic and moral concern in public management . . . The past cannot be changed, although through interpretation and reinterpretation it can be translated into wisdom or foolishness” (1987, 119). Put somewhat differently, James (1952, 396–397) said that “the knowledge of some other part of the stream, past or future, near or remote, is always mixed in with our knowledge of the present thing.” Considering managerial networking with its relation to the past behavior benefits us by unpacking our knowledge of the current status and wisdom from the past to help us make better decisions in the future.

Notes
1. We also tested the main effect of relative networking on other types of performance measures. The average ACT score, average SAT score, and percentage of students who scored above 1110 on the SAT (or its ACT equivalent) were used as measures of college-bound student performance. The results showed the predicted quadratic relationship between relative networking and student performance ($\beta_{\text{ACT}} = 0.0006, p < .05$, the quadratic term in model 1; $\beta_{\text{SAT}} = 0.0006, p < .05$, the quadratic term in model 2; $\beta_{1111} = 0.012, p < .01$, the quadratic term in model 3). See table S1 in the Supporting Information online for the post hoc analysis on the relationship between relative level of networking and other measures of organizational performance.
2. Numerous studies on managerial networking, particularly those focusing on local school districts, operationalize superintendents’ efforts to engage in managerial networking by using the extensiveness and frequency of networking activities—thus, the level of using superintendents’ personal or professional ties with a set of stakeholders (e.g., Meier and O’Toole 2001). Time spent in interaction, which is a necessary precondition to build any meaningful relationship, is critical for cultivating social capital (Acquaah 2007). Frequent contacts are believed to provide greater opportunities for communication of managerial information and expertise through the development of and engagement in networking relationships with others (La Due Lake and Huckfeldt 1998). Although this approach has a limitation in capturing the effectiveness of networking (McGuire 2002), the usefulness of this perspective remains when investigating how active a top manager is in using networking activities to achieve organizational goals (Luo 2003).
3. A single measure of relative networking could mask the heterogeneity of the subdimension of relative networking activity, and collapsing all of the networked nodes into a monolithic measure could limit the theoretical and practical implications of the study. Therefore, in addition to exploring the overall relative level of networking activity, the post hoc analyses examined three subdimensions of relative networking: political support, bureaucratic coping,
Relative Managerial Networking and Performance

References


Supporting Information
A supplementary appendix may be found in the online version of this article at http://onlinelibrary.wiley.com/doi/10.1111/puar.13164/full.