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Gendered Networking: Gender, Environment, and Managerial Networking

Research Article

Abstract: *This article examines how gender influences top managers' networking activities and what situational factors intensify or ameliorate such gender effects. Focusing on female top managers' efforts to engage in external networking activities, the authors conceptualize how and why female managers might develop different networking patterns and how such relationships could be redirected by several contingent factors specific to the context of U.S. local school districts. Using three sets of surveys on managerial behavior and management styles supplemented with six years of information related to organizational contexts, the authors find that, in general, gender differences lead to corresponding differences in the extent of involvement in managerial networking. Such effects are moderated by situational factors that impede or facilitate the number of available strategic managerial choices that allow managers to cope with them. The findings emphasize the need to consider the strengths and weaknesses of gender conjointly in assessing networking behaviors.*

Evidence for Practice

- Differences in the types of networking activities undertaken by female and male managers and the time they spend on them may have a bearing on whether, and in what ways, female and male managers' networking behaviors can be utilized for specific purposes.
- Turbulent conditions within an organization provide female managers with the opportunity, motivation, and ability to more actively engage in external networking to benefit the organization.
- Uncertainties in the managerial environment are salient when assessing managers' networking activity is based on gender.

Networking activities of top managers are frequently employed as managerial strategies to obtain social resources embedded within a network (Florin, Lubatkin, and Schulze 2003) and to buffer unexpected external threats (Luo 2003). Research focusing on top managers, top management teams, and entrepreneurship has examined the importance of networking and networks in creating supportive coalitions among external actors who can provide critical social, economic, and political resources to the focal organization (Hoang and Antoncic 2003; Larson and Starr 1993). Adopting this perspective in the setting of public organizations, ample public management research has documented the outcomes of top managers' networking activities (e.g., Meier and O'Toole 2001, 2003). However, despite voluminous research indicating the positive impact of networking on organizational performance, little empirical research has investigated the factors that influence top managers' decisions to engage in networking relationships with external entities.

Networks are inherently formed on the basis of social interactions; they are understood as "a mechanism through which individuals become connected to and positioned within that social field" (Hanson and Blake 2009, 137). Top managers' efforts to develop and exploit personal, social, and professional networking relationships with external entities can enable them to acquire resources, information, and knowledge, all of which may be necessary to mitigate the uncertainties and challenges facing their organizations (Acquaah 2007). Their willingness to engage in networking relationships is informal by nature, so the extent to which top managers exploit interpersonal ties depends strongly on their willingness to develop and maintain such social connections with others (Meier and O'Toole 2005).

From the perspective of upper echelons theory (Hambrick and Mason 1984), individual characteristics of top managers strongly influence organizational strategies, including collaborative activities, because "executives act on the basis of their

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personalized interpretations of the strategic situations they face and these personalized construals are a function of the executives' experiences, values and personalities" (Hambrick 2007, 334). Considering networking behaviors as part of leaders' strategic actions, top managers' choices and willingness regarding how much time and energy to devote to the network setting—as well as in which directions and with which actors—inherently reflect their demographic characteristics, socioeconomic backgrounds, attitudinal characteristics, and personal job experiences (Michael and Yukl 1993; Peng and Luo 2000). Among top managers' characteristics, the focus of this article is on the differences in networking behaviors between male and female managers, because gender can shape the patterns of social interactions (Hanson and Blake 2009; Ridgeway and Smith-Lovin 1999).

While demographic diversity in areas such as gender and race has been widely recognized as a key determinant of managerial behaviors in individuals, consensus on the gender role in managerial networking remains elusive. For instance, social role theory offers one explanation of what creates gender differences and similarities in social behavior (Eagly 1987; Eagly and Karau 2002). According to this theory, gender differences in social behavior follow from gender-specific societal roles, which are "the typical characteristics of roles commonly held by women versus men" (Eagly, Wood, and Diekman 2000, 126). As a result of these gender-typical roles and behavioral expectations, women and men adjust their social behaviors, such as networking involvement, by acquiring the specific resources necessary to meet role requirements.

On the other hand, structural theory suggests that managerial attitudes and behaviors are primarily determined by structural positions and positional power in organizations rather than by inherent gender-related attitudes (Kanter 1976). Kanter argued that "the behavior of women at the bottom (or alone) should be seen as a function of *being* at the bottom, and not primarily as a function of being a woman" (1976, 416). Thus, regardless of gender, people at the top position or of higher status tend to behave as leaders largely because of the power and influence of their positions in a hierarchical setting. From this perspective, the networking behavior of male and female managers who find themselves in the same positions in an organization may not be different.

So far, one basic tenet of these perspectives is that differences between women and men exist in various managerial behaviors and in the organizational outcomes of individuals. Critical questions that would improve our understanding of managerial networking remain unanswered, however, including the following: *What is the association between gender and managerial networking? Do female managers always actively (or inactively) engage in networking relationships, and if not, what are the contextual conditions that constrain or enhance the gender effect of networking?*

This article analytically addresses these questions by concentrating on a specific domain—public managers working in the public education arena—and investigating how gender influences their networking activities and what situational factors intensify or ameliorate any such effect. This article aims to empirically explore gender differences in public managers' networking relationships using a series of data drawn from public school districts in Texas.

Theoretical Background and Hypotheses

Managerial Networking

Top managers in every organization construct networking relationships by "making interpersonal contacts, keeping address logs, phoning contacts to follow up initial meetings, attending meetings, and so forth" (Aldrich, Reese, and Dubini 1989, 342). Borrowing especially from Granovetter's (1985) and Powell's (1990) concepts, Peng and Luo defined managerial networking as "an individual's attempt to mobilize personal contacts in order to profit from entrepreneurial opportunities and a firm's efforts to cooperate with others in order to obtain and sustain a competitive advantage" (2000, 488). Research on managerial networking has long recognized that mobilizing networks to implement public programs can offer significant advantages; such research has been devoted to explaining how managers work externally in their interdependent environment to shape results (Klijn, Steijn, and Edelenbos 2010; O'Toole and Meier 2011). Compared with the numerous studies on the role of managerial networking in the management and performance research agenda, relatively little attention has been paid to the determinants of managerial networking. Only a few studies have examined the variance in networking activities (e.g., Andrews et al. 2011; Forret and Dougherty 2001). This article's main contribution is to enhance our understanding of the determinants of managerial networking by highlighting the role of gender difference.

The public education arena has evolved into a complex setting that includes a variety of actors at different levels of government and across sectors, although it is not among the most complex or most highly networked settings (O'Toole and Meier 2011). As schools have broadened their scope of services from the core educational function to delivering public health services to children and preventing and responding to child abuse, the room for involvement of external entities in local education activities has expanded. Thus, a contemporary local school system is unquestionably embedded in a network web to deliver both its core educational and ancillary functions.

In the specific context of a local school district, public managers can cultivate managerial ties using personal and informal interactions with external entities such as parents, other superintendents in neighboring school districts, and teachers' associations. In addition to personal ties, at the organizational level, top managers in each school district—typically called superintendents—can create unique relationships with officials at various levels of government as part of their duties in intergovernmental relations. Viewing school district operations as "conflict-ridden arenas in which competing interest groups influence the distribution of scarce resources" (Björk and Gurley 2005, 168), top managers in each district 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 (Cuban 1988; Kowalski 2006).

In organizations, managers' networking relationships can be described and understood in terms of the various properties of networking, such as network range (Moore 1990; Zhao and Aram 1995), network composition (Ibarra 1993; Munch, McPherson, and Smith-Lovin 1997), and frequency (volume) of contacts (Moore 1990; Watson 2012). Our focus is on the

extensiveness and frequency of networking activities—managers' level of actual use of personal or professional ties with a set of stakeholders (e.g., Meier and O'Toole 2003). The amount of time spent in interaction is critical to cultivating social capital (Coleman 1988), and more frequent contacts are expected to open greater opportunities for communicating managerial information and expertise through the development of and engagement in networking relationships (La Due Lake and Huckfeldt 1998). Although this level is limited to capturing the effectiveness of networking, it is nevertheless a valuable perspective from which to investigate how active a top manager is in using networking activities to achieve organizational goals or respond to changes in the external environment (Luo 2003).

Gender and Networking Activity

Despite the increased access of women to supervisory and middle management positions, top executive or top management positions have remained a predominantly male domain across all sectors of society (Eagly and Karau 2002). In Texas school districts, women made up 76.8 percent of all employed teachers (Ramsay 2016) and 60.3 percent of employed principals (Ramsay 2015) during the 2010–11 academic year. However, women constituted only 21.6 percent of school district superintendents, showing the relatively low representation of women in top leadership positions in local public education. Across all sectors, women lag substantially behind men when it comes to representation in leadership positions in spite of the considerable progress in women's professional advancement in the United States. Given this reality, the goal of identifying barriers to women's advancement in relation to sex-based stereotyping issues (e.g., roles [Powell and Butterfield 1979] and attributional bias [e.g., Leslie, Mayer, and Kravitz 2014]) has become a leading topic in management research.

Gender differences have long been recognized among scholars in a variety of fields, including organizational behavior, psychology, education, sociology, and even neurology. For instance, organizational behavior scholars have studied gender differences in organizational performance (e.g., Sweeney and McFarlin 1997); different work attitudes such as commitment, job satisfaction, and responsibility (Scandura and Lankau 1997); and technology and innovation adoption (Venkatesh, Morris, and Ackerman 2000).

A substantial body of literature has examined the role of gender in public management. Given the increasing awareness of workforce diversity in the public sector, the role of gender in public management has become an important area of interest for policy makers and researchers (Grissom, Nicholson-Crotty, and Keiser 2012). Focusing particularly on leadership positions, a rich body of research has endorsed gender differences in managerial behaviors and leadership traits in various organizational contexts, including school districts (Keiser et al. 2002; Meier, O'Toole, and Goerdel 2006), law enforcement agencies (Meier and Nicholson-Crotty 2006), and state agencies (Bowling et al. 2006). Researchers have also begun to examine the association between the gender role and management issues such as leadership, employee turnover, job satisfaction, managerial value, and performance (Grissom, Nicholson-Crotty, and Keiser 2012; Hamidullah, Riccucci, and Pandey 2015; Opstrup and Villadsen 2015). However, relatively little attention has been paid to the role of gender in influencing networking activities; even among the few exceptions, most studies reporting on gender roles in workplace relational patterns have not systematically explored gender-related differences in behavioral patterns of involvement in external networking.

Furthermore, researchers have not reached a consensus regarding sex-differentiated managerial behaviors. One view holds that the leadership styles of female and male leaders are not significantly different (e.g., Bartol and Martin 1986; Bass 1981; Nieva and Gutek 1981). The basis for this view is that any differences in leadership or managerial styles are attributable not to gender but to other situational and structural variables. A contrasting view suggests a clear pattern of differences between the managerial styles of female and male leaders. According to Eagly's (1987) social role theory, because of gender-specific societal role and behavioral expectations, women are socialized to possess communal qualities (e.g., helpfulness, nurturance, and kindness), while men are expected to possess agentic values and behaviors (e.g., assertiveness, confidence, and independence). These different socialization processes contain within themselves sex-differentiated expectations that lead to differences in leadership emergence between female and male managers.

In the literature on managerial networking, the results of the small number of previous studies are inconclusive. Among the few public management studies on networking behaviors of female top managers in public organizations, Esteve et al. (2013) empirically tested the hypothesis that public organizations led by female managers are more likely to engage in interorganizational collaborations than those managed by male managers, using survey data from 228 chief executives in Catalonia. However, they did not find significant gender differences in the managers' extent of personal networking contacts. Similarly, using a sample of Texas school district superintendents, Meier, O'Toole, and Goerdel (2006) found no support for gender differences in managing outward to the external network or managing upward with the school board. These findings support the notion that there is no consistently clear pattern of differences in leadership style between female and male designated leaders (Bartol and Martin 1986). In their meta-analysis of gender and leadership style, Eagly and Johnson explained the reasons to expect the absence of sex differences in leadership style: "Behavior may be less stereotypic when women and men who occupy the same managerial role are compared because these organizational leadership roles, which typically are paid jobs, usually provide fairly clear guidelines about the conduct of behavior" (1990, 234).

By contrast, some researchers in entrepreneurship studies, particularly on small and medium-sized enterprises, have examined gender differences in networking and the relationship between networking and entrepreneurial outcomes (e.g., Aldrich, Reese, and Dubini 1989; Renzulli, Aldrich, and Moody 2000; Watson 2012). Aldrich, Reese, and Dubini (1989), for instance, empirically found that female entrepreneurs are less likely to have a higher level of network activity. Cromie and Birley (1992) also found that female managers, on average, spent less time developing networking contacts. Consistent with other studies on leadership styles, such gender differences in managerial networking can be supported because of "the possibility of ingrained sex differences in

personality traits and behavioral tendencies, differences that are not nullified by organizational selection or socialization" (Eagly and Johnson 1990, 235).

Even among those who support the notion of gender differences in managerial networking, research has produced findings that, to a significant degree, are empirically inconclusive on the extent to which female managers are more likely to engage in networking relationships. Some have claimed that female managers network more because they are better at communicating, encouraging participation, and sharing information as a result of their interactive and inclusive characteristics (Dolan 2000; Eagly and Johnson 1990; Helgesen 1990; Jacobson, Palus, and Bowling 2010; Johansen 2007; Keiser et al. 2002; Wilkins 2007). For example, Meier, O'Toole, and Goerdel proposed that female managers are more likely to engage in the development of networking relationships with stakeholders because of their "less hierarchical and more participatory, interactional, flexible, consociational, and multifaceted" (2006, 25) managerial styles. Similarly, in terms of educational leadership, Grogan and Shakeshaft argued that women leaders are more likely to engage in networked relationships within organizations and in the community beyond the organization because of their collaborative leadership approach, which allows them to focus on "the relationships, events, and activities—particularly the unstructured intra- and interorganizational ones—that contribute to organizational direction-setting and goal achievement" (2011, 45).

On the other hand, Aldrich, Reese, and Dubini (1989) argued that female entrepreneurs are actually less likely to have a higher level of network activities because of socially constructed barriers such as sex segregation in the workplace, balancing work and family responsibilities, and organized social life. Likewise, Cromie and Birley (1992) argued that female managers are typically expected to have fewer and less developed network contacts because they are more likely to enter self-employment from a domestic or other nonmanagerial background and because, in cases in which women move directly from paid employment into self-employment, they usually occupy lower-level positions in the organizations from which they depart. Consistent with this argument, Watson noted that "compared to men, women are likely to have fewer networks, less time available for networking and networks that favour family and friends (strong ties with few structural holes) over professional advisors (weak ties with many structural holes)" (2012, 538). Thus, female managers might have fewer networks than their male counterparts, and they are more likely to be embedded in informal types of networking (Aldrich, Reese, and Dubini 1989). In a similar vein, using the Texas school district data, Johansen (2007) found that female managers are more likely to be defenders and reactors rather than prospectors. While defenders focus more on internal management efficiency and key organizational tasks, prospectors are more likely to seek external opportunities aggressively through networking activities beyond the organization. Therefore, female managers are less likely to choose external networking as their primary management strategy.

Given the mixed results in the low number of empirical studies on the association between gender and managerial networking, it does not appear feasible to posit a theory-based research hypothesis. Although empirical studies in the public management literature have not shown a concrete conclusion concerning gender differences in networking activities, scholars have agreed that the top manager's gender plays a critical role in interorganizational collaboration (Esteve et al. 2013; Meier, O'Toole, and Goerdel 2006). Instead of assuming a simple association, the true nature of the gender effect on managerial networking needs to be understood in depth, with due consideration of contextual factors that could act as moderators. Thus, this study aims to answer the following research question: what is the association between gender and managerial networking?

Interactions between Gender and Organizational Environment

In spite of the inconsistent findings reported here, scholars have made no further attempts to identify mechanisms or contextual factors that might influence the association between gender and managerial networking. In this context, we reconcile the different predictions by exploring contextual factors that might intensify or ameliorate the effect of gender difference on networking behavior. Female managers might not always act passively or actively in networking relationships; rather, they can intentionally and directly engage in networking activities to respond to specific environmental constraints. The organizational environment is directly relevant to this process because it provides important contextual information about managers' networking activities. Considering the fact that managerial networking is a purposive action that involves a wide range of intertwined intentions, the variations in managerial networking across organizations may result from top managers' willingness to use their personal ties for organizational purposes and to function as boundary spanners (e.g., Williams 2002), which can tap into and seize opportunities for external gains and buffer external threats (Andrews et al. 2011; Luo 2003; Meier and O'Toole 2008). We extend these arguments to propose interaction effects between gender and each of Dess and Beard's (1984) three dimensions of the organizational environment: munificence, complexity, and turbulence.

Gender and munificence. Munificence refers to the level of resources that an organization can utilize within its environment to support its sustained growth. Given that greater munificence implies a higher level of internal resources and more opportunities to draw on external resources, munificence often serves as a "selection mechanism" that enables or constrains organizational actions (Koka, Madhavan, and Prescott 2006). To further our understanding of how gender contributes to managerial networking, it is necessary to investigate the role of environmental munificence in the model. Because resources are critical, the presence of available internal resources can convey a message to managers that they must lean on their own resources. More specifically, although female managers may show lower involvement in networking relationships than male managers, this relationship may be contingent on the munificence level in the environment in which a given organization exists. In a highly munificent environment in which financial assistance is readily available and enables managers' capacities to use such resources, better outcomes will be expected regardless of managers' efforts to engage in external networking. The organizational capacity available in munificent environments can buffer the organization from external threats and create fewer stressful situations, thereby providing greater latitude and enough resources for female

managers to implement their management plans without significant consideration of external politics (Krishnan and Park 2005).

> **Hypothesis 1**: The interaction effects between organizational munificence and gender predict the level of managerial networking such that female managers in organizations with greater munificence show less involvement in networking relationships than those in organizations with lower munificence.

Gender and complexity. The concept of complexity refers to "the heterogeneity of and range of an organization's activities" (Child 1972, 3). As the complexity and diversity of environmental factors increase, managers experience greater uncertainty and have heightened responsibilities (Duncan 1972). The need for strategic actions to manage the large number and wide variety of critical contingencies for resource acquisition is paramount (Dess and Beard 1984). Therefore, the extensiveness of networking activities may depend on various stakeholders' complex demands. Considering the negative relationship between complexity and performance in public organizations (Boyne and Meier 2009), increases in complexity may cause anxiety about its negative impacts on performance and force managers to handle environmental uncertainty.

Among the various methods for conceptualizing task complexity, this article employs the extent of racial/ethnic heterogeneity of subgroups in the organization. Ibarra (1993) argued that women's networking patterns are constrained by the structural composition of organizational groups and that such organizational factors can play an important role in moderating the relationship between gender and network structure. Ibarra also included "the extent to which functional and departmental groups are segregated by sex or race, such that group members are systematically overrepresented in certain subunits and underrepresented in others" (1993, 66) as an example of organizational context.

In the public education arena, as student demographics are changing rapidly across the United States, the leadership role of superintendents as chief executive officers has become more complex than ever (Wright and Harris 2010). After the implementation of the No Child Left Behind Act of 2001, closing the achievement gap between white students and other demographic populations became a core goal in school districts; today's changing demographics demand collaborative leadership from superintendents to respond effectively to the diverse needs and cultural sensitivity found in the communities where they serve (Wright and Harris 2010).

In light of the diversity challenge, Henze (2000) reported that proactive leadership is positively related to improved interethnic relations among students, increased academic achievement, and enhanced involvement of diverse parents. Among the different types of strategic management typologies, Johansen (2007) found that male managers are more likely than females to use the prospector strategy, while female managers tend to use the defender or reactor strategy. Considering different strategic choices by gender, male managers in a diverse setting are more likely to take proactive and prospective actions, whereas female leaders are more likely to be defenders who put more emphasis on the organization's main goals while reducing any distractions that may hinder their achievement. Moreover, female leaders in public education appear to demonstrate a strong "children first" orientation due to their socialization as primary caretakers (Miller, Washington, and Fiene 2006). Therefore, female managers working with heterogeneous and complex group compositions are more likely to pay attention to internal processes to improve achievement in diverse groups of students instead of reaching outside the organization. As a result, the gender difference in managerial networking will be intensified as complexity increases.

> **Hypothesis 2**: The interaction effects between organizational complexity and gender predict the level of managerial networking such that female managers in organizations with higher complexity show less involvement in networking relationships than those in organizations with lower complexity.

Gender and dynamism. Dess and Beard conceptualized environmental dynamism as "a change that is hard to predict and that heightens uncertainty for key organizational members" (1984, 56). Boyne and Meier (2009) also characterized dynamism as a drastic and unexpected change over time in munificence and complexity. Rapid and even unexpected changes in the environment increase the difficulty of relying on existing strategies, history, or experiences in making decisions (Dess and Beard 1984; Koka, Madhavan, and Prescott 2006). As females and males undergo different socialization processes that affect their socialized behavior, they have different assessments of risk such that male managers are in general more tolerant of risk (Jayawarna, Jones, and Marlow 2015). Female managers are more risk avoidant and actively pursue the resources necessary to survive in a highly uncertain situation (Marlow and Swail 2014). They are likely to be better equipped with the skills needed for adapting to change and alleviating stresses among subordinates, thereby improving organizational performance and achieving their goals (Krishnan and Park 2005). For organizations facing highly unpredictable environments, risk-avoidant female managers may actively engage in networking activities to obtain critical resources externally, and they will expand their personal resources to respond more effectively to changing those conditions and to cope with the varying demands of the environment.

> **Hypothesis 3:** The interaction effects between organizational turbulence and gender predict the level of managerial networking such that female managers in organizations with higher turbulence show more involvement in networking relationships than those in organizations with lower turbulence.

Data and Methods

Data

In this study, a series of longitudinal data analyses were conducted to examine the determinants of managerial networking in the context of Texas school districts. Three sets of Texas school district superintendent management surveys collected in 2005, 2007, and 2009 served as the primary data source for the analysis. Starting in 2000, Meier and O'Toole sent survey questionnaires to superintendents—top managers in each district—to collect information about their management styles, goals, time allocation, and leadership. The average response rate over the three terms was

63 percent. The 2005 survey had 657 respondents (64 percent), the 2007 survey generated 678 responses (66 percent), and the 2009 survey had a 58 percent response rate. This data set was supplemented with an objective district-level data set containing a wide range of indicators about performance, demographics, and financial resources, among others. The nonsurvey data for the more than 1,000 Texas school districts during the 2004–09 period were drawn from the Texas Education Agency.

Measures

Networking activity. The networking behaviors of top managers in local governments were operationalized using the frequency of contact with each party, assuming that "managers cannot engage in network-like behavior with other actors in the environment without coming into contact with them" (O'Toole and Meier 2011, 59). Thus, networking activity refers to the extensiveness of a top manager's networking involvement. The set of nodes in this study included local business leaders, state legislators, the state educational agency (Texas Education Agency), federal educational officials, parent groups, and teachers' associations. Because of the multi-item nature of the measurement, we employed a summative index for scaling analysis; the scale aggregated the networking activity of the top manager. Since the items that measured the networking response variable were based on the retrospective behavioral self-report for networking management rather than on self-perceptions of networking performance (e.g., how frequently the respondent interacts with state legislators), our results should be reasonably robust against common source bias. Meier and O'Toole (2013) found that questions about observable behavior appear to be less affected by common source bias than other questions.

Gender. The predictor variable in our models was the top manager's gender, which was dummy coded 1 if the top manager was female.

Moderators. Environmental munificence was measured using three variables: (1) the amount of total revenue per pupil (logged) controlled for district size, (2) the tax rate as an indicator of the district's available resources, and (3) the percentage of low-income students as an indicator of the general income of the populace (Andrews and Johansen 2012). An overall munificence measure was created by performing a principal components analysis, with a higher factor score indicating a greater level of munificence.

The concept of complexity was narrowed to explain the extent of heterogeneity of educational service recipients (Tung 1979), focusing on their ethnic diversity. The measure of overall complexity was calculated following Andrews et al. (2011). The proportion of each subgroup of students in the school district, including black, Latino, white, and other students (e.g., Asians and Native Americans), was squared, summed, and subtracted from 10,000. This measure served as a proxy for "the relative homogeneity-heterogeneity of the organizational environment, with a high score on the index representing a high level of complexity" (Andrews et al. 2011, 364).

Environmental dynamism was measured following Rattsø (1999), as applied by Boyne and Meier (2009). In their study on the impact of environmental turbulence on performance, Boyne and Meier (2009) created five individual indicators of turbulence and combined them into a single index. For instance, revenue turbulence was measured by regressing the total school district revenue (logged) on its logged value for the prior year. From this equation, they obtained the value of the residual, indicating "the extent to which revenues deviate from the level that would be expected on the basis of the previous year's financial position" (Boyne and Meier 2009, 808). Rather than focusing on an increase or decrease in changes, the absolute value of the residual was used as a measure of revenue turbulence to capture the degree of unpredictability. The same procedures were repeated to measure enrollment turbulence, low-income student turbulence, black student turbulence, and Latino student turbulence. For those three student-composition turbulences, the absolute value of the residual was obtained by regressing the logged percentage of each group of students on its logged value for the prior year. The five measures of turbulence were summed to create an overall measure of dynamism, with higher values indicating greater dynamism.

Controls. Changing superintendents was dummy coded 1 when a succession event occurred in the district. Superintendent succession information was obtained from annual school district directories, which contain basic district information such as the school address and superintendent name. The tenure of the top manager indicated how long the superintendent of a school district had been in that specific position. In the survey, superintendents were asked to answer a question about their tenure in their current office. Managerial stability was measured by the number of years the superintendent had been employed by his or her current district in any capacity (Meier and O'Toole 2003). Higher scores mean more stability, offering additional information about constancy among top leadership.

Top managers' perceptions of change were measured using survey questions about organizational change, such as "Our district is always among the first to adopt new ideas and practices," "Our district frequently undergoes change," and "We continually search for new opportunities to provide services to our community." Responses to these statements were measured using a four-point scale ranging from 1 (strongly disagree) to 4 (strongly agree). The composites were formed by averaging the ratings for the items for each year. District size was measured using the total enrollment numbers in each district. Descriptive statistics and correlations for the predictor variables appear in table 1.

Analysis

Hypothesis testing was accomplished through hierarchical regression with clustered standard errors. Hierarchical regression allows for the direct assessment of change in explanatory power between iterative steps. The least squares technique was used with the control variables entered as a block in step 1, followed by the main effects in step 2, and the interaction and moderators in step 3. In this study, we observed the response variable for each manager repeatedly at several different times. For repeated measurements involving a given manager, the set of observations for that manager formed a cluster, repeated classifications within manager. Observations within a cluster are usually positively correlated. Analyses should take correlation into account, and it is important to note that analyses that do not consider the correlation can estimate model parameters well, but standard error estimators can be badly biased (Agresti 1996). Unfortunately, conventional statistical techniques (e.g.,

Table 1 Descriptive Statistics

Quantitative Variables	Mean	SD	1	2	3	4	5	6	7
1. Networking activity	26.44	3.84	—						
2. District size	5,253.9	1,269.4	.145	—					
3. Manager tenure	4.81	4.95	−.097	−.018	—				
4. Managerial stability	9.35	9.24	−.043	.064	.506	—			
5. Perceptions of change	2.84	.45	.018	.011	.068	.021	—		
6. Munificence	.06	0.76	.011	.0004	−.015	−.016	−.061	—	
7. Complexity	4,060	1,750	.054	.149	.004	−.007	.036	.008	—
8. Turbulence	32.28	3.78	.141	.593	−.053	.106	.112	−.042	.427
Categorical Variables	**Proportion**	**SE**							
1. Gender	.18	.38							
2. Manager succession	.16	.37							

ordinary regression analysis) ignore this hierarchy, which may lead to incorrect results (Hox 1995; Hox and Kreft 1994; Raudenbush and Bryk 1992). Furthermore, conventional statistical techniques lean heavily on the assumption of the independence of observations. All observations are regarded as independent, when in fact there is structural dependence (Hox 1995; Vancouver, Millsap, and Peters 1994). Violation of the assumption of independence of observations may cause too small estimates of standard errors, which in turn may lead to "significant" findings that are actually spurious (Raudenbush and Bryk 1992). To avoid these pitfalls, the hierarchical regression with clustered standard errors was selected as the appropriate technique for evaluating the hypotheses in this study.

Post Hoc Analyses (Lump-Together Problem versus Measurement Error)

A series of post hoc analyses were conducted to assist in validating the relationship between gender and networking behavior. To take measurement error into account, we employed summative indices. However, because of the heterogeneity of the networking activity used in this study (and in most studies), lumping subdimensions together into a single composite would likely mask the characteristic differences among the three subdimensions. Thus, in addition to exploring the extensiveness of networking activity, the post hoc analyses examined three subdimensions of networking activities that might be influenced differently by gender.

Torenvlied et al. (2012) developed three dimensions of networking activity in the context of Texas school districts. For public organizations, political support—through relationships with elected officials, clients, or the media—is a key environmental support. This political dimension covers relationships with local business leaders and state legislators. The second dimension, bureaucratic support from actors such as the Texas Education Agency and federal education officers, is also critical within the intergovernmental system. The third coproduction dimension of support covers relationships with parent groups and teachers' associations, since education is a coproduced service based on collaborative relations among parents, teachers, and schools. Top managers' strategic actions may vary according to the patterns of relationships that provide different types of resources (Meier and O'Toole 2005). Therefore, the post hoc analyses follow the classification of Torenvlied et al. (2012) and categorize the networking ties between the top managers of each school district and the set of nodes into three groups: political support, bureaucratic coping, and coproduction. The three scales aggregate the networking activity of the top managers in different ways.

Results

Since our dependent variables are quantitative, we conducted a hierarchical analysis with clustered standard errors. As shown in tables 2 and 3, three different models were tested. The main effect model in table 2 (equation 2) shows that the top manager's gender has a significant negative effect on networking activity ($\beta = -.928$, $p < .01$). This finding indicates that female managers are less likely than male managers to engage frequently in networking relationships.

Assistance in interpreting this pattern was also provided by the post hoc analyses, which explored the determinants of the extensiveness of networking activities of top managers working in school districts. The results indicate that among the three different types of networking activities, female managers are less likely than male managers to engage in political support networking relationships. The nonsignificant coefficients for gender in bureaucratic coping and coproduction networking activities suggest that districts headed by men and women do not differ significantly in contacting external entities for purposes of bureaucratic coping and coproduction.

Strong results were identified when testing the interaction effects of the organizational environment (munificence, complexity, and turbulence) on networking activity (equation 3 in table 2). The results for two-way interactions of gender confirmed that the effect of turbulence on the level of networking activity is stronger and that the effects of munificence and complexity are weaker for female than for male managers. Moderation plots and slope tests for hypotheses 1–3 appear in figures 1–3.

Hypothesis 1, which posits that organizational munificence has a negative moderating effect on the relationship between gender and networking activity, was supported ($\beta = -.401$, $p < .05$). There is no gender effect when munificence is low. Managers' approaches to the level of networking activity diverge widely based on gender as munificence increases.

Similar results were revealed for hypothesis 2, which posits that organizational complexity has a negative moderating effect on the relationship between gender and networking activity ($\beta = -.0004$, $p < .01$). Figure 2 is a graph of means relevant to the interaction effect. The slopes of the high and low complexity regression lines indicate that as organizational complexity increases, male managers do not demonstrate a deterioration in the level of networking activity; however, the networking activity of female managers decreases with each unit of added complexity. This indicates that

Table 2 Hierarchical Analysis with Clustered Standard Error When Dependent Variable (DV) Is Extensiveness of Networking Activity (NA)

Variables	DV = NA (Reference Model)	DV = NA (Main Effect Model)	DV = NA (Interaction Model)
Equation	(1)	(2)	(3)
Controls			
District size (total enrollment)	.0001*** (.00002)	.0001*** (.00003)	3.81×10^{-5}*** ($2.1*10^{-6}$)
Manager succession	.005 (.221)	.032* (.221)	−.003 (.225)
Manager tenure	−.071** (.022)	−.078** (.022)	−.073*** (.002)
Managerial stability	−.004 (.009)	.0004 (.038)	−.004 (.01)
Perceptions of change	.073 (.153)	.107 (.153)	.086 (.156)
Year = 2009	−.063 (.141)	−.061 (.16)	−.053 (.101)
Year = 2007	−.136 (.137)	−.233 (.214)	−.217 (.378)
Main effect			
Gender (ref. = male)	—	−.928*** (.208)	−4.571** (2.01)
Munificence	—	—	.175* (.113)
Complexity	—	—	.0001 (.0001)
Turbulence	—	—	.071** (.035)
Interaction effect			
Gender*Munificence	—	—	−.401** (.224)
Gender *Complexity	—	—	−.0004*** (.0001)
Gender*Turbulence	—	—	.162*** (.067)
N	1,479	1,479	1,479
AIC	13,869.28	13,817.44	13,381.44
BIC	13,910.02	13,863.97	13,462.42

Note: The values in the parenthesis are the robust standard errors.
***$p < .01$; **$p < .05$; *$p < .1$.

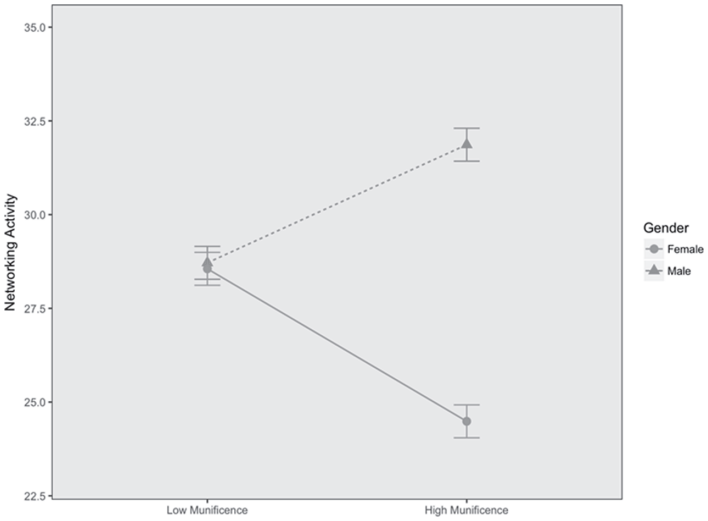
Table 3 Summary of Hypotheses Test Results

Hypothesis Statement	Variable of Interest	Dependent Variable	Hypothesized Relationship with DV	Results	Table # (Equation #)
RQ: What is the association between gender and managerial networking?	Top manager's gender	Networking activity	—	—	2. (2)
H1: The interaction effects between organizational munificence and gender predict the level of managerial networking such that female managers in organizations with greater munificence show less involvement in networking relationships than those in organizations with lower munificence.	Top manager's gender* Munificence	Networking activity	Negative	Supported	2. (3)
H2: The interaction effects between organizational complexity and gender predict the level of managerial networking such that female managers in organizations with higher complexity show less involvement in networking relationships than those in organizations with lower complexity.	Top manager's gender* Complexity	Networking activity	Negative	Supported	2. (3)
H3: The interaction effects between organizational turbulence and gender predict the level of managerial networking such that female managers in organizations with higher turbulence show more involvement in networking relationships than those in organizations with lower turbulence.	Top manager's gender* Turbulence	Networking activity	Positive	Supported	2. (3)

female managers are more likely to develop internal communication and focus on internal management instead of reaching outside the organization when complexity is high.

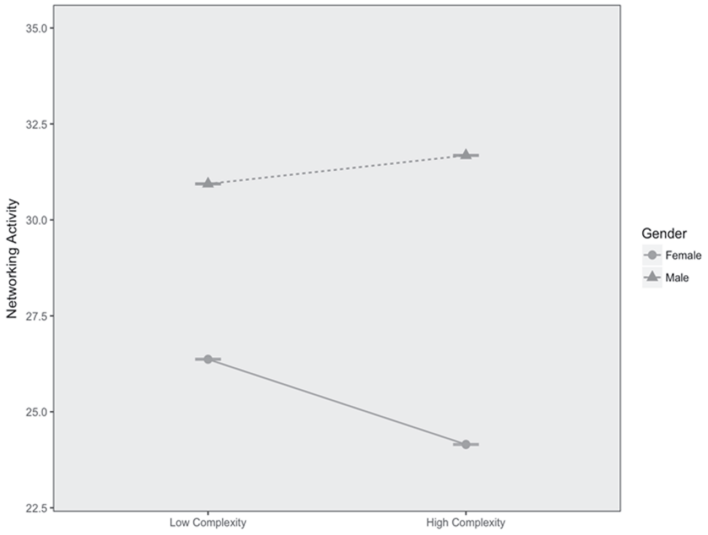
The third and final hypothesis posits that organizational turbulence has a positive moderating effect on the relationship between gender and the level of networking activity; this hypothesis was also supported ($\beta = .162$, $p < .01$). In the current context, female managers are more inclined than male managers to increase their levels of networking activity as turbulence increases. Female managers thus have a positive moderating effect on the relationship between networking activity and turbulence, indicating that they are more sensitive to changes in turbulence. Male managers appear to have a negative insulating effect on the potential effects of increasing turbulence compared with female managers.

Unlike previous studies, this study found that uncertainties in the managerial environment were salient when assessing whether managers' networking activity was based on their gender. Environmental contingencies are frequently considered in management research, but the present study is among the first to consider the impact of uncertainty-based externalities on managers' networking activity in the context of manager gender. With the uncertainty in the decision making process resulting from rapid and unexpected changes, we observed the strong effect of gender in the managerial environment on the extent to which turbulence



Note: Vertical bar indicates confidence interval (± 2 standard deviations) for the mean value.

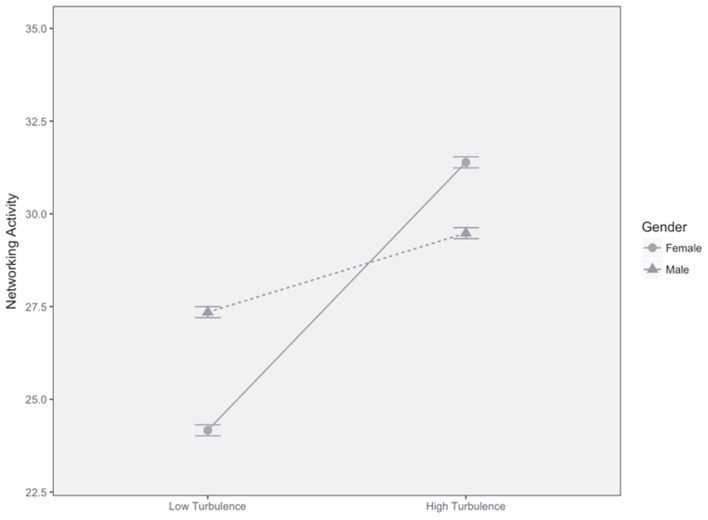
Figure 1 Moderating Effects of Munificence on Networking Activity



Note: Vertical bar indicates confidence interval (± 2 standard deviations) for the mean value.

Figure 2 Moderating Effects of Complexity on Networking Activity

leads to changes in the environment. In fact, the hierarchical models (equation 3 in table 2) suggested that the interaction between turbulence and female managers does not "wash out" the revealed direct effect between female managers and networking activity ($\beta = -4.571$, $p < .05$). Gender difference is important to the extent that the managerial environment is perceived as understandable and the environment is perceived as a drastic and unexpected change over time by managers. This finding yields an important implication for public management. Decision makers will increasingly want to latch onto the first solutions that appear to female managers as turbulence in the managerial environment increases. This uncertainty-driven solution does not arise from fear or intimidation concerning management without a full consideration of the organization's precise needs; instead, this sort of networking-driven



Note: Vertical bar indicates confidence interval (± 2 standard deviations) for the mean value.

Figure 3 Moderating Effects of Turbulence on Networking Activity

solution results from a comprehensive assessment of the managerial environment.

Conclusion

This study examined how gender influences top managers' networking activities and what situational factors either intensify or ameliorate such gender effects. Focusing on female top managers' efforts to engage in networking relationships with external entities, we conceptualized how and why female managers might develop different networking patterns, as well as how such relationships could be redirected by several contingent factors specific to the context of local U.S. governments. Using a data set consisting of six years of information related to organizational contexts and three sets of surveys on managerial behavior and management styles, we tested our hypotheses and found broad support for them, as shown in table 3. The results revealed that, in general, gender differences led to corresponding differences in the extent of involvement in managerial networking; such effects were moderated by several situational factors that impede or facilitate the number of available strategic managerial choices that allow managers to cope with them.

The results, or at least those based on the context of Texas school districts, confirmed that female managers were less likely to engage in external networking activities. Our approach is consistent with the arguments that highlight the limited access of female managers to societal resources through networking activities (e.g., O'Leary and Ickovics 1992; Ragins and Sundstrom 1989). According to the post hoc analysis, it was evident in the local school districts studied that female managers are less likely than male managers to be drawn into key political groups, such as state legislators and local business leaders who can provide political support for tax levies or greater state funds for education. Alternatively, the absence of significant gender differences in both bureaucratic coping and coproduction networking suggests that both male and female managers build external networks equally well.

Differences in the types of networking activities undertaken by female and male managers and the time they spend on them may have a bearing on whether, and in what ways, female and male managers' networking behaviors can be utilized for specific purposes. Of course, the nature and scope of opportunities available through networking activities highly depends on the types of networking ties that one interacts with (Ibarra 1993). Considering that gaining access to different networks means differential returns, managers may utilize managerial networking for the strategic purpose of obtaining necessary resources and information from the distinct sets of network nodes within their respective settings. On the other hand, through networking relationships, managers are ideally able to "send signals to stakeholders about the organization's effectiveness" (Johansen and LeRoux 2013, 357). Thus, the network groups frequently contacted by a top manager in a focal organization are likely to have opportunities to provide practical resources and/or authorities to assess the extent to which its programs and services are perceived as legitimate.

Compared with the value of a political support group (state legislators and local business leaders), both the coproduction (parent groups and teachers' associations) and bureaucratic coping groups (state-and federal-level education officials) were revealed to be more attractive as network contacts in terms of their ability to function as a source of power for accessing critical educational resources and information. In the education field, local school districts are heavily influenced by federal and state educational policy changes, so they are generally more aware of the relevant institutional resources and constraints. At the same time, for the organization to achieve its primary goal, which in this case would be educational achievement, the top managers in each school district are required to work with teachers in implementing their instructional goals and with parents through their active involvement in their children's education (Torenvlied et al. 2012). This coproduction group pursues common goals and the interest of mutual benefits with managers in school districts, and those managers have the motive to display a strong reputation and the relative prestige of the educational services in their respective districts to ensure the continuous contributions of both parents and teachers toward improving public education. This also seems to be consistent with the instructional focus of female superintendents, as well as with the idea that female superintendents tend to be centered more firmly around values regarding children and families, in addition to being concerned with community building (Grogan and Brunner 2005).

We conducted this study with the idea that contextual factors—munificence, complexity, and turbulence—would mitigate the impact of gender. We found negative moderating effects of both munificent and complex environmental contexts on the association between gender and managerial networking. We should note, however, that under turbulent circumstances, female managers are more sensitive to growing turbulence and tend to rapidly increase their involvement in external networking relationships to cope more successfully with unexpected situations. In times of turbulence, both the clients and constituents of an organization require their leaders to be open to innovative ideas, bring a fresh approach to leadership, promote the productive steering and influencing of relationships rather than excessively controlling them, and foster continual consensus and mutual trust among them. Under such conditions, the stereotypical leadership traits and styles of female leaders, often described as relationship oriented and transformational, are considered more effective (Furst and Reeves 2008). Such conventional wisdom regarding women's superiority under turbulence reinforces our finding that turbulence promotes female managers' active involvement in external networking activities.

This study, with its emphasis on public organizations, contributes in an important way to research on managerial networking. Although prior work has often extolled the virtues of networking relationships in terms of better public performance (see Meier and O'Toole 2003), we took a different perspective to investigate other potential factors affecting the differences in networking behaviors among public managers. Our study joins the growing body of research on the determinant side of managerial networking in the public sector (e.g., Andrews et al. 2011).

Our primary contribution is the elucidation of the important role that gender differences play in determining managerial behaviors in networking relationships. Prior empirical research on public managers' networking behaviors has ignored the role of gender or rarely tested for it as a control variable, therefore considering it insignificant. By contrast, we have shown that gender could be one of the critical factors that account for the different networking patterns of top managers. Our results recast prevailing perspectives on gendered networking in the entrepreneurship and management literature, which have implied that female managers are less likely to actively engage in networking relationships.

Moreover, our research model specifies the conditions under which relatively passive or inactive female managers exploit such connections in turbulent organizational situations. Public management researchers have framed managerial networking as a strategy whereby public managers can overcome environmental uncertainties or tap certain opportunities in specific environmental contexts. Like others, we take issue with this perspective and ask under what conditions female managers' efforts to engage in networking relationships could actually be further accelerated. Focusing on three dimensions of the task environment, namely munificence, complexity, and turbulence, we identified a set of contingencies that point to either the negative (e.g., munificence and complexity) or positive (turbulence) moderators of these relationships. While prior studies on the determinants of managerial networking have often examined the direct effect of environmental characteristics on networking, this study extends the contingency perspective even further by identifying the important characteristics of the intermediaries that broker the direct effect of top manager characteristics, such as gender, on managerial networking. We argue that turbulent conditions within an organization provide female managers with the opportunity, motivation, and ability to more actively engage in external networking to benefit their own organizations. Another possible explanation of this finding is that, in many cases, top female managers are expected to be "tough" to either hold their positions or rise up in the managerial ranks in a competitive environment. What this means is that female managers may have to actively change their networking (or communication) styles in an effort to adapt to male-dominant hierarchical organizations, especially under turbulent conditions (Shade 1995).

Our results are perhaps best understood in light of some caveats, which also highlight the significant role of context in this project. We conducted this study in the specific setting of local school districts in the state of Texas. The roles, expectations, political/managerial concerns, and stakeholder relationships of the superintendents, who are top managers in school districts, are quite different from those of city or county managers. Even considering the differences in the ways in which stakeholders reacted to female leadership in the education setting, the results still revealed that women were less likely to build up networking relationships, which are known to be important in developing an effective managerial approach to improving performance, with the exception of situations in which their surrounding environment was unpredictable. Such a conclusion requires additional studies in a variety of settings for confirmation. Future studies in other contexts may reveal a great deal more about the complexities involved in understanding the dynamics of gendered networking. In addition, besides the differences in task environments, we need to study other contextual differences such as the diversity climate.

It is also important to note that the measures of networking activities were developed using the frequency of contact between top managers and their stakeholders. While this study attempts to build a comprehensive model of managerial networking using only quantitative components, it would be valuable to supplement this study with qualitative data from interviews with managers on the purpose of engaging in networking activities.

Despite its limitations, this study stimulates other research questions regarding managerial networking in the field of public management. By focusing on gender differences in managerial networking, we shed light on a promising pathway for research on managerial networking behaviors and offer a richer perspective of the actions of powerful intermediaries to redirect gendered networking.

References

Acquaah, Moses. 2007. Managerial Social Capital, Strategic Orientation, and Organizational Performance in an Emerging Economy. *Strategic Management Journal* 28(12): 1235–55.

Agresti, Alan. 1996. *An Introduction to Categorical Data Analysis*. New York: Wiley.

Aldrich, Howard, Pat Ray Reese, and Paola Dubini. 1989. Women on the Verge of a Breakthrough? Networking Among Entrepreneurs in the United States and Italy. *Journal of Entrepreneurship and Regional Development* 1(4): 339–56.

Andrews, Rhys, and Morgen Johansen. 2012. Organizational Environments and Performance: A Linear or Nonlinear Relationship? *Public Organization Review* 12(2): 175–89.

Andrews, Rhys, George A. Boyne, Kenneth J. Meier, Laurence J. O'Toole, Jr., and Richard M. Walker. 2011. Environmental and Organizational Determinants of External Networking. *American Review of Public Administration* 41(4): 355–74.

Bartol, Kathryn M., and David C. Martin. 1986. Women and Men in Task Groups. In *The Social Psychology of Female-Male Relations: A Critical Analyses of Central Concepts,* edited by Richard D. Ashmore and Frances K. Del Boca, 259–310. Orlando, FL: Academic Press.

Bass, Bernard M. 1981. *Stogdill's Handbook of Leadership: A Survey of Theory and Research*. New York: Free Press.

Björk, Lars G., and Keith D. Gurley. 2005. Superintendent as Educational Statesman and Political Strategist. In *The Contemporary Superintendent: Preparation, Practice, And Development,* edited by Lars G. Björk and Theodore J. Kowalski, 163–86. Thousand Oaks, CA: Corwin Press.

Bowling, Cynthia J., Christine A. Kelleher, Jennifer Jones, and Deil S. Wright. 2006. Cracked Ceilings, Firmer Floors, and Weakening Walls: Trends and Patterns in Gender Representation among Executives Leading American State Agencies, 1970–2000. *Public Administration Review* 66(6): 823–36.

Boyne, George A., and Kenneth J. Meier. 2009. Environmental Turbulence, Organizational Stability, and Public Service Performance. *Administration & Society* 40(8): 799–824.

Child, John. 1972. Organizational Structure, Environment and Performance: The Role of Strategic Choice. *Sociology* 6(1): 1–22.

Coleman, James S. 1988. Social Capital in the Creation of Human Capital. *American Journal of Sociology* 94: S95–120.

Cromie, Stan, and Sue Birley. 1992. Networking by Female Business Owners in Northern Ireland. *Journal of Business Venturing* 7(3): 237–51.

Cuban, Larry. 1988. How Schools Change Reforms: Redefining Reform Success and Failure. *Teachers College Record* 99(3): 453–77.

Dess, Gregory G., and Donald W. Beard. 1984. Dimensions of Organizational Task Environments. *Administrative Science Quarterly* 29(1): 52–73.

Dolan, Julie. 2000. The Senior Executive Service: Gender, Attitudes, and Representative Bureaucracy. *Journal of Public Administration Research and Theory* 10(3): 513–29.

Duncan, Robert B. 1972. Characteristics of Organizational Environments and Perceived Environmental Uncertainty. *Administrative Science Quarterly* 17(3): 313–27.

Eagly, Alice H. 1987. *Sex Differences in Social Behavior: A Social-Role Interpretation*. Hillsdale, NJ: Lawrence Erlbaum.

Eagly, Alice H., and Blair T. Johnson. 1990. Gender and Leadership Style: A Meta-Analysis. *Psychological Bulletin* 108(2): 233–56.

Eagly, Alice H., and Steven J. Karau. 2002. Role Congruity Theory of Prejudice Toward Female Leaders. *Psychological Review* 109(3): 573–98.

Eagly, Alice H., Wendy Wood, and Amanda B. Diekman. 2000. Social Role Theory of Sex Differences and Similarities: A Current Appraisal. In *The Developmental Social Psychology of Gender,* edited by Thomas Eckes and Hanns Martin Trautner, 123–74. New York: Psychology Press.

Esteve, Marc, George Boyne, Vicenta Sierra, and Tamyko Ysa. 2013. Organizational Collaboration in the Public Sector: Do Chief Executives Make a Difference? *Journal of Public Administration Research and Theory* 23(4): 927–52.

Florin, Juan, Michael Lubatkin, and William Schulze. 2003. A Social Capital Model of High-Growth Ventures. *Academy of Management Journal* 46(3): 374–84.

Forret, Monica L., and Thomas W. Dougherty. 2001. Correlates of Networking Behavior for Managerial and Professional Employees. *Group & Organization Management* 26(3): 283–311.

Furst, Stacie A., and Martha Reeves. 2008. Queens of the Hill: Creative Destruction and the Emergence of Executive Leadership of Women. *Leadership Quarterly* 19(3): 372–84.

Granovetter, Mark S. 1985. Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology* 91(3): 481–510.

Grissom, Jason A., Jill Nicholson-Crotty, and Lael Keiser. 2012. Does My Boss's Gender Matter? Explaining Job Satisfaction and Employee Turnover in the Public Sector. *Journal of Public Administration Research and Theory* 22(4): 649–73.

Grogan, Margaret, and Cryss Brunner. 2005. Women Leading Systems. *The School Administrator* 62(2): 46–50.

Grogan, Margaret, and Carol Shakeshaft. 2011. *Women and Educational Leadership*. San Francisco: Jossey Bass.

Hambrick, Donald C. 2007. Upper Echelons Theory: An Update. *Academy of Management Review* 32(2): 334–43.

Hambrick, Donald C., and Phyllis A. Mason. 1984. Upper Echelons: The Organization as a Reflection of Its Top Managers. *Academy of Management Review* 9(2): 193–206.

Hamidullah, Madinah F., Norma M. Riccucci, and Sanjay K. Pandey. 2015. Women in City Hall: Gender Dimensions of Managerial Values. *American Review of Public Administration* 45(3): 247–62.

Hanson, Susan, and Megan Blake. 2009. Gender and Entrepreneurial Networks. *Regional Studies* 43(1): 135–49.

Helgesen, Sally. 1990. *The Female Advantage: Women's Way of Leadership*. New York: Doubleday.

Henze, Rosemary C. 2000. Leading for Diversity: How School Leaders Achieve Racial and Ethnic Harmony. Research Brief 6, Center for Research on Education, Diversity, and Excellence. Accessed January 10, 2017. http://escholarship.org/uc/item/91w130c8 [accessed January 19, 2018].

Hoang, Ha, and Bostjan Antoncic. 2003. Network-Based Research in Entrepreneurship: A Critical Review. *Journal of Business Venturing* 18(2): 165–87.

Hox, Joop J. 1995. *Applied Multilevel Analysis*. Amsterdam: TT-publikaties.

Hox, Joop J., and Ita G. G. Kreft. 1994. Multilevel Analysis Methods. *Sociological Methods & Research* 22(3): 283–99.

Ibarra, Herminia. 1993. Personal Networks of Women and Minorities in Management: A Conceptual Framework. *Academy of Management Review* 18(1): 56–87.

Jacobson, Willow S., Christine Kelleher Palus, and Cynthia J. Bowling. 2010. A Woman's Touch? Gendered Management and Performance in State Administration. *Journal of Public Administration Research and Theory* 20(2): 477–504.

Jayawarna, Dilani, Oswald Jones, and Susan Marlow. 2015. The Influence of Gender upon Social Networks and Bootstrapping Behaviours. *Scandinavian Journal of Management* 31(3): 316–29.

Johansen, Morgen S. 2007. The Effect of Female Strategic Managers on Organizational Performance. *Public Organization Review* 7(3): 269–79.

Johansen, Morgen, and Kelly LeRoux. 2013. Managerial Networking in Nonprofit Organizations: The Impact of Networking on Organizational and Advocacy Effectiveness. *Public Administration Review* 73(2): 355–63.

Kanter, Rosabeth Moss. 1976. The Impact of Hierarchical Structures on the Work Behavior of Women and Men. *Social Problems* 23(4): 415–30.

Keiser, Lael R., Vicky M. Wilkins, Kenneth J. Meier, and Catherine A. Holland. 2002. Lipstick and Logarithms: Gender, Institutional Context, and Representative Bureaucracy. *American Political Science Review* 96(3): 553–64.

Klijn, Erik-Hans, Bram Steijn, and Jurian Edelenbos. 2010. The Impact of Network Management on Outcomes in Governance Networks. *Public Administration* 88(4): 1063–82.

Koka, Balaji R., Ravindranath Madhavan, and John E. Prescott. 2006. The Evolution of Interfirm Networks: Environmental Effects on Patterns of Network Change. *The Academy of Management Review* 31(3): 721–37.

Kowalski, Theodore J. 2006. *The School Superintendents: Theory, Practice, and Cases*. 2nd ed. Thousand Oaks, CA: Sage Publications

Krishnan, Hema A., and Daewoo Park. 2005. A Few Good Women—On Top Management Teams. *Journal of Business Research* 58(12): 1712–20.

La Due Lake, Ronald, and Robert Huckfeldt. 1998. Social Capital, Social Networks, and Political Participation. *Political Psychology* 19(3): 567–84.

Larson, Andrea, and Jennifer A. Starr. 1993. A Network Model of Organization Formation. *Entrepreneurship: Theory and Practice* 17(2): 5–16.

Leslie, Lisa M., David M. Mayer, and David A. Kravitz. 2014. The Stigma of Affirmative Action: A Stereotyping-Based Theory and Meta-Analytic Test of the Consequences for Performance. *Academy of Management Journal* 57(4): 964–89.

Luo, Yadong. 2003. Industrial Dynamics and Managerial Networking in an Emerging Market: The Case of China. *Strategic Management Journal* 24(13): 1315–27.

Marlow, Susan, and Janine Swail. 2014. Gender, Risk and Finance: Why Can't A Woman Be More Like A Man? *Entrepreneurship & Regional Development* 26(1–2): 80–96.

Meier, Kenneth J., and Jill Nicholson-Crotty. 2006. Gender, Representative Bureaucracy, and Law Enforcement: The Case of Sexual Assault. *Public Administration Review* 66(6): 850–60.

Meier, Kenneth J., and Laurence J. O'Toole, Jr. 2001. Managerial Strategies and Behavior in Networks: A Model with Evidence from US Public Education. *Journal of Public Administration Research and Theory* 11(3): 271–94.

———. 2003. Public Management and Educational Performance: The Impact of Managerial Networking. *Public Administration Review* 63(6): 689–99.

———. 2005. Managerial Networking: Issues of Measurement and Research Design. *Administration & Society* 37(5): 523–41.

———. 2008. Management Theory and Occam's Razor: How Public Organizations Buffer the Environment. *Administration & Society* 39(8): 931–58.

———. 2013. Subjective Organizational Performance and Measurement error: Common Source Bias and Spurious Relationships. *Journal of Public Administration Research and Theory* 23(2): 429–56.

Meier, Kenneth J., Laurence J. O'Toole, Jr., and Holly T. Goerdel. 2006. Management Activity and Program Performance: Gender as Management Capital. *Public Administration Review* 66(1): 24–36.

Michael, James, and Gary Yukl. 1993. Managerial Level and Subunit Function as Determinants of Networking Behavior in Organization. *Group & Organization Management* 18(3): 328–51.

Miller, Stephen K., Youlanda C. Washington, and Jeanna R. Fiene. 2006. Female Superintendents: Historic Barriers and Prospects for the Future. *Journal of Women in Educational Leadership* 4(4): 9–31.

Moore, Gwen. 1990. Structural Determinants of Men's and Women's Personal Networks. *American Sociological Review* 55(5): 726–35.

Munch, Allison, J. Miller McPherson, and Lynn Smith-Lovin. 1997. Gender, Children, and Social Contact: The Effects of Childrearing for Men and Women. *American Sociological Review* 62(4): 509–20.

Nieva, Veronica F., and Barbara A. Gutek. 1981. *Women and Work: A Psychological Perspective*. New York: Praeger.

O'Leary, Virginia E., and Jeannette R. Ickovics. 1992. Cracking the Glass Ceiling: Overcoming Isolation and Alienation. In *Womanpower: Managing in Times of Demographic Turbulence,* edited by Uma Sekaran and Frederick T. L. Leong, 7–30. Thousand Oaks, CA: Sage Publications.

Opstrup, Niels, and Anders R. Villadsen. 2015. The Right Mix? Gender Diversity in Top Management Teams and Financial Performance. *Public Administration Review* 75(2): 291–301.

O'Toole, Laurence J., Jr., and Kenneth J. Meier. 2011. *Public Management: Organizations, Governance, and Performance*. New York: Cambridge University Press.

Peng, Mike W., and Yadong Luo. 2000. Managerial Ties and Firm Performance in a Transition Economy: The Nature of a Micro-Macro Link. *Academy of Management Journal* 43(3): 486–501.

Powell, Gary N., and D. Anthony Butterfield. 1979. The "Good Manager": Masculine or Androgynous? *Academy of Management Journal* 22(2): 395–403.

Powell, Walter W. 1990. Neither Market nor Hierarchy: Network Forms of Organization. *Research in Organizational Behavior* 12: 295–336.

Ragins, Belle R., and Eric Sundstrom. 1989. Gender and Power in Organizations: A Longitudinal Perspective. *Psychological Bulletin* 105(1): 51–88.

Ramsay, Michael C. 2015. Employed Principal Demographics 2011–2015. Texas Education Agency. http://tea.texas.gov/Reports_and_Data/Educator_Data/Educator_Reports_and_Data/ [accessed January 2, 2017].

——— 2016. Employed Teacher Demographics 2011–2015. Texas Education Agency. http://tea.texas.gov/Reports_and_Data/Educator_Data/Educator_Reports_and_Data/ [accessed January 2, 2017].

Rattsø, Jorn. 1999. Aggregate Local Public Sector Investment and Shocks: Norway 1946–1990. *Applied Economics* 31(5): 577–84.

Raudenbush, Stephen W., and Anthony S. Bryk. 2002. *Hierarchical Linear Models: Applications and Data Analysis Methods*. Thousand Oaks, CA: Sage Publications.

Renzulli, Linda A., Howard Aldrich, and James Moody. 2000. Family Matters: Gender, Networks, and Entrepreneurial Outcomes. *Social Forces* 79(1): 523–46.

Ridgeway, Cecilia L., and Lynn Smith-Lovin. 1999. The Gender System and Interaction. *Annual Review of Sociology* 25: 191–216.

Scandura, Terri A., and Melenie J. Lankau. 1997. Relationships of Gender, Family Responsibility and Flexible Work Hours to Organizational Commitment and Job Satisfaction. *Journal of Organizational Behavior* 18(4): 377–91.

Shade, Leslie Regan. 1995. Gendered Lives: Communication, Gender and Culture. *Canadian Journal of Communication* 20(1). https://doi.org/10.22230/cjc.1995v20n1a860.

Sweeney, Paul D., and Dean B. McFarlin. 1997. Process and Outcome: Gender Differences in the Assessment of Justice. *Journal of Organizational Behavior* 18(1): 83–98.

Torenvlied, René, Agnes Akkerman, Kenneth J. Meier, and Laurence J. O'Toole, Jr. 2012. The Multiple Dimensions of Managerial Networking. *American Review of Public Administration* 43(3): 251–72.

Tung, Rosalie L. 1979. Dimensions of Organizational Environments: An Exploratory Study of Their Impact on Organization Structure. *Academy of Management Journal* 22(4): 672–93.

Vancouver, Jeffrey B., Roger E. Millsap, and Patricia A. Peters. 1994. Multilevel Analysis of Organizational Goal Congruence. *Journal of Applied Psychology* 79(5): 666–79.

Venkatesh, Viswanath, Michael G. Morris, and Phillip L. Ackerman. 2000. A Longitudinal Field Investigation of Gender Differences in Individual Technology Adoption Decision-Making Processes. *Organizational Behavior and Human Decision Processes* 83(1): 33–60.

Watson, John. 2012. Networking: Gender Differences and the Association with Firm Performance. *International Small Business Journal* 30(5): 536–58.

Wilkins, Vicky M. 2007. Exploring the Causal Story: Gender, Active Representation, and Bureaucratic Priorities. *Journal of Public Administration Research and Theory* 17(1): 77–94.

Williams, Paul. 2002. The Competent Boundary Spanner. *Public Administration* 80(1): 103–24.

Wright, Howell, and Sandra Harris. 2010. The Role of the Superintendent in Closing the Achievement Gap in Diverse Small School Districts. *Planning and Changing* 41(3–4): 220–33.

Zhao, Liming, and John D. Aram. 1995. Networking and Growth of Young Technology-Intensive Ventures in China. *Journal of Business Venturing* 10(5): 349–70.

Appendix

Variables	DV = Networking Activity (Main Effect)	DV = Political Support Networking (Main Effect)	DV = Bureaucratic Coping Networking (Main Effect)	DV = Coproduction Networking (Main Effect)
Equation	(1)	(2)	(3)	(4)
Controls				
District size (total enrollment)	.0001*** (.00003)	.0001*** (.00003)	.0001*** (.00002)	.0001*** (.00003)
Manager succession	.032* (.221)	.019 (.073)	.112 (.073)	.029 (.072)
Manager tenure	−.078** (.022)	−.001 (.006)	−.018** (.007)	−.023*** (.007)
Managerial stability	.0004 (.038)	−.003 (.003)	−.004 (.003)	.003 (.003)
Perceptions of change	.107 (.153)	.162*** (.053)	−.204*** (.052)	.119** (.052)
Year = 2009	−.061 (.16)	.010 (.068)	−.456*** (.067)	−.048 (.066)
Year = 2007	−.233 (.214)	.067 (.071)	.481*** (.064)	.071 (.063)
Main effect				
Gender (ref. = male)	−.928*** (.208)	−.304*** (.071)	−.033 (.068)	−.011 (.067)
N	1,479	1,479	1,479	1,479
AIC	13,817.44	11,096.64	8,988.41	8,982.45
BIC	13,863.97	11,157.02	9,046.96	9,040.942