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Why So Difficult? Exploring Negative Relationships between Educational Leaders: The Role of Trust, Climate, and Efficacy

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Recent work suggests the importance of collaboration among district-office and school leaders. Most studies examine prosocial relationships, but negative social ties, which may be more consequential, are rarely examined. We collected survey data from 78 educational leaders on perceptions of culture and negative relationships and used social-network analysis to examine the likelihood of leaders forming negative relationships. Findings indicate that “senders” of negative ties tended to be district-office leaders, who often reported higher efficacy and perceived less trust, whereas “receivers” of negative ties were more likely to perceive more trust and have been employed in the district longer.

Education reform has increasingly relied on educational leaders to collaborate in developing and implementing change at the district and school levels (Daly 2009; Mintrop and Trujillo 2007). Recent studies indicate that, in addition to

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NOVEMBER 2015 1

paying attention to the technical approaches to educational reform, it is also imperative to address the social processes, or social capital, involved in the implementation of change efforts, which may be equally influential in the success of school and district improvement (Coburn et al. 2013; Penuel et al. 2010). Until recently, studies have mainly examined the social process of reform by focusing on the development of collaborative structures within schools (Stoll and Louis 2007). However, improved relationships between school-site principals and district-office administrators within a district may be critical in supporting complex, system-wide reform (Copland and Knapp 2006). Building on recent scholarship that suggests the importance of relational ties between leaders in supporting organizational change from a social-network perspective (Kilduff and Krackhardt 2008; Liou et al. 2014; Mehra et al. 2006), this study draws on social-network theory to examine relationships between district-office leaders and principals in an underperforming district.

Most network scholarship focuses on productive relationships between individuals. These prosocial ties (e.g., advice, collaboration) have been associated with a variety of desired outcomes at both the individual and network levels (Daly 2010; Kilduff and Krackhardt 2008; Moolenaar et al. 2011). As such,

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most network studies both in and outside education privilege relatively positive—or at least neutral—ties, while typically overlooking negative or difficult relationships (e.g., Frank et al. 2011; Kilduff and Krackhardt 2008). We argue that this oversight is significant as a number of studies suggest that negative relations (e.g., gossip, avoidance) are consequential inhibitors to the exchange of resources and efforts for overall organizational change (Uzzi and Dunlap 2012; Violino 2012). In fact, some scholars outside of education have gone so far as to argue that negative or challenging relationships may be even more consequential for outcomes, outweighing the effects of positive ties (Labianca and Brass 2006; Padgett et al. 2008; Uchino et al. 2012; Yap and Harrigan 2015). However, empirical study of negative relationships among educators in general, and leaders in particular, is lacking. Moreover, we have limited evidence of the way in which these negative ties take shape in educational systems striving to improve.

Therefore, the aim of this study is to explore factors that may contribute to the likelihood that educational leaders form negative professional relationships. Specifically, we focus on a subset of negative ties, that of difficult professional relationships among district leaders and school-site principals, and how such difficult ties are likely to occur given leaders' perceptions of trust, innovative climate, efficacy, and demographics. We draw on data from 78 educational leaders from one midsize urban-fringe school district in the United States using an advanced social-network technique, p2 modeling. By exploring perceptions of trust, innovative climate, and efficacy as antecedents of difficult ties, this study suggests factors that may be associated with the formation of negative ties.

Theoretical Framework

Improvement Context

In response to pressures from the current educational-accountability context, districts and schools around the globe are enacting a number of reforms in an effort to improve outcomes (Mintrop and Trujillo 2007). Recently, scholars have argued that, in addition to more technical approaches to reform (e.g., developing individual knowledge and skills, prescriptive curricula, and standardized measurement systems), it is equally important to pay attention to the social capital that supports schools in the implementation of reform (e.g., Co-burn and Russell 2008; Penuel et al. 2010). A growing body of literature suggests that in schools and districts with high levels of social capital or a strong web of social relationships in which trust, risk taking, and interaction are central,

educators may be better able to improve outcomes (Bryk and Schneider 2002; Mintrop and Trujillo 2007).

Social capital may not only be an important asset within schools, but it may also be important at a larger systemic level, as in school districts and communities (Pollock 2013). Building on this notion, researchers examining educational reform have begun to move beyond the school to examine interactions between district offices and schools (Honig and Coburn 2008; Rorrer et al. 2008). This line of work suggests the importance of social relationships between district administrators and site leaders in aligning processes and structures to support a coherent approach to reform (Coburn et al. 2013; Honig and Coburn 2008; Rorrer et al. 2008).

Studies of districts that applied such a systemic approach to change indicate a range of strategies that district offices and schools can use in building stronger relationships (Togneri and Anderson 2003). These strategies include creating opportunities for increased collaboration (McLaughlin and Talbert 2003), developing learning partnerships (Copland and Knapp 2006), enhancing communication (Agullard and Goughnour 2006), and distributing leadership (Spillane 2006). However, this literature base largely overlooks negative relationships between leaders that may inhibit reform. To theorize about the importance of negative relationships, we draw on social-network theory.

Social-Network Theory and Negative Ties

Social-network theory is concerned with the pattern of social ties among individuals in a social network (Borgatti and Foster 2003; Cross et al. 2002; Scott 2000). Several basic assumptions of social-network theory are critical to understanding the social processes between actors (Burt 1982; Degenne and Forsé 1999). First, actors in a social network are assumed to be interdependent and interconnected (Degenne and Forsé 1999). Second, relationships are regarded as ties that provide for the exchange and flow of resources between actors (Kilduff and Tsai 2003). Third, the structure of a network has influence on the resources that flow to and from an individual and across a system (Borgatti and Foster 2003). Fourth, social networks yield both opportunities and constraints for individual and collective action (Gulati 1995; Tsai and Ghoshal 1998).

Based on the potential influence of social relations on individual and collective outcomes, scholars have begun exploring the phenomenon of networks in a wide variety of educational settings (Coburn and Russell 2008; Daly 2010; Frank et al. 2011; Levine and Marcus 2010). This line of work suggests that social ties and the resulting networks are consequential to supporting or constraining the exchange of best practices, collaboration, support, and advice (Finnigan and Daly 2012; Finnigan et al. 2013; Liou and Daly 2014; Moolenaar

2012; Spillane et al. 2012). These prosocial, or positive, ties with others within a workplace can be beneficial to increasing organizational effectiveness (e.g., Cross et al. 2008; Daly et al. 2013). Dense prosocial networks have been found to result in increased productivity, higher levels of innovation, and improved organizational functioning (Daly et al. 2013).

While positive relationships may facilitate information transfer that improves group or organizational outcomes (Coburn et al. 2013; Tsai 2001), negative relationships may impede exchanges beneficial to organizational improvement (Labianca and Brass 2006; Yap and Harrigan 2015). In general, studies on negative relationships are rare, especially among educators, likely because of the difficulty of collecting empirical data to examine such relationships. In classroom research, a few studies investigating bully-victim relationships (e.g., Huitsing et al. 2012; Veenstra et al. 2007; Zijlstra et al. 2008) shed light on the social structure of such negative relationships. Recently, organizational research has started to examine negative relationships in the workplace. This work suggests that maladaptive relationships (e.g., gossip and maltreatment) have negative effects on organizational and relational outcomes (Ellwardt et al. 2012; Grosser et al. 2010). Moreover, this literature suggests that such negative relationships may, in fact, overshadow the effects of positive ties (Padgett et al. 2008; Uchino et al. 2012). In this study we examine a particular subset of negative ties, that of “difficult professional relationships,” in which actors have difficulty communicating and coming to mutual understanding.

Our understanding of how relationships, both positive and negative, among educators form and of which factors contribute to tie formation is limited. Over time, judgments regarding the liking and disliking of individuals, along with the complex emotions, attitudes (Leskovec et al. 2010), and perceptions associated with relationships, lead people to form personal schemas about those with whom they interact (Labianca and Brass 2006). This complex mix of schemas, cognitions, and emotions is likely to influence interactions. In this regard, negative relationships may, in fact, represent an enduring set of negative judgments, feelings, and behaviors toward another that may constrain the flow of resources in an organization and therefore may better explain outcomes than positive or neutral events (Labianca and Brass 2006). As such, better understanding of the antecedents associated with challenging relationships may provide opportunities to identify and perhaps disrupt these potentially destructive ties.

The Density and Reciprocity of Negative (Difficult) Ties

Network density.—Network density is commonly used in most network studies to explore the total number of ties. Density refers to the proportion of ex-

isting to potential ties in a network. Studies estimate that negative relationships make up only 1%–8% of the total number of relationships in an organization (e.g., Labianca and Brass 2006; Labianca et al. 1998), but these relationships may be consequential for information flow because they create either active gaps in the network or passive bottlenecks. In a typical workplace setting, it may be challenging to cut negative ties because of workflow, as cutting these ties can disrupt alignment and coherence (Labianca and Brass 2006). Given that the limited studies on negative ties have suggested these relationships are rare, yet influential, we hypothesize that the difficult professional relationship network among educational leaders will be made up of few ties (i.e., may be a sparse network; hypothesis 1).

Reciprocal negative ties.—Studies in organizations and classrooms indicate that negative relationships, in comparison to positive relationships, are more likely to be reciprocated, meaning that if one person dislikes another, this dislike is likely to be mutual (Huitsing et al. 2012; Labianca and Brass 2006; Yap and Harrigan 2015). These reciprocated negative ties are likely to create additional social liabilities, as they represent at best a gap in the network or at worst an ongoing conflict that can diffuse across a system and influence other actors. These conflicts inhibit the flow of resources both between individuals and among the larger network, due in part to the self-reinforcing cycle of negative responses. Following these studies, we hypothesize that difficult professional relationships among educational leaders are likely to be reciprocated (hypothesis 2).

Sending or receiving negative ties.—A negative relationship can also exist in the form of a unidirectional relationship with an individual either being the initiator (sender) or the recipient (receiver) of a negative relationship. We also hypothesize that certain factors at the individual level (e.g., perceptions of trust, innovative climate, and efficacy) and that demographics (e.g., work level, gender, and experience) may contribute to sending or receiving negative ties among educational leaders as they work together in improving outcomes. In addition, we hypothesize that negative relationships may form as a result of dyadic characteristics that describe similarities between two individuals (e.g., when both individuals are at the same work level). In estimating the likelihood of leaders sending or receiving negative ties, we draw on several key factors that the literature suggests may be associated with negative ties. For each area, we provide a general overview and associated hypotheses.

Individual Characteristics Associated with the Formation of Negative (Difficult) Ties

Trust.—Trust can be defined as an individual's or group's willingness to be vulnerable to another party based on the confidence that the latter party is

benevolent, reliable, competent, honest, and open (Hoy and Tschannen-Moran 2003). As such, trust is an interactive process that involves interdependent individuals embedded in a network of relationships (Bryk and Schneider 2002; Hoy and Tschannen-Moran 2003). In educational settings, trust has been found to be important to a number of efforts in support of improvement, innovative change, and reform (e.g., Liou and Daly 2014; Moolenaar et al. 2014; Van Maele and Van Houtte 2012).¹ High levels of trust are associated with an increased likelihood of engaging in supportive relationships to seek feedback and share concern, whereas school climates characterized by low trust, or even distrust, may negatively impact relationships (Bryk and Schneider 2002; Tschannen-Moran 2004), especially in terms of risk taking (Tuytens and Devos 2010). Moreover, in low-trust contexts, educators are also less likely to engage one another (Bryk and Schneider 2002), which may also further erode interactions and lead to a climate of conflict, isolation, and misunderstanding (Hoy and Tschannen-Moran 2003; Troman 2000). Therefore, given that high trust is viewed as important in positive educational outcomes and that low-trust environments may be more conducive to climates of isolation and conflict, we hypothesize that leaders who perceive their environment to be characterized by low trust will have a higher likelihood of sending and receiving difficult professional relationships (hypothesis 3).

Innovative climate.—An innovative climate can be conceptualized as the shared perceptions of organizational members concerning the practices, procedures, and behaviors that promote the generation of new knowledge and practices (Van der Vegt et al. 2005). Organizations in which members are willing to take risks and share new ideas to improve the organization are more successful at implementing innovations than organizations with less innovative climates (Geijssels 2001). At an individual level, educators who perceive their organization's climate to be innovative are more inclined to seek out work-related interactions and to develop innovative practices (Moolenaar et al. 2011). Conversely, individuals who perceive the climate to be risk averse are less likely to engage in exploration and form new relationships (Greenhalgh et al. 2004; Nystrom et al. 2002), perhaps fostering a climate of isolation, lowered trust, and maintenance of the status quo (Daly 2009). Moreover, leaders who perceive the climate to be risk averse are also less likely to support subordinates in risk taking, which in turn may reduce the organization's ability to innovate and develop strong ties (Greenhalgh et al. 2004; Liou 2014; Nystrom et al. 2002). Therefore, we hypothesize that leaders who perceive their environments to be less innovative will have a higher likelihood of sending and receiving difficult professional relationships (hypothesis 4).

Efficacy.—Individuals' sense of efficacy refers to one's belief that she or he can successfully take actions to accomplish certain tasks or achieve some goals (e.g., leaders' confidence to implement reform or affect learning) (Bandura

1993). Efficacy is one key component in individual and organizational outcomes such as learning, teaching, and the ability to take on leadership roles toward successful reform (Daly et al. 2011; Louis et al. 2010). Moreover, leaders with higher efficacy may be able to achieve better outcomes, as they also tend to persist even in the face of obstacles (Tschannen-Moran and Gareis 2004). As reform efforts often involve a great deal of interaction, highly efficacious leaders may be better able to connect and motivate others to engage with and sustain change efforts. Leaders with less perceived efficacy may be inhibited in their ability to lead change and thus might encounter more difficulties in working with and through others, potentially resulting in challenging relationships (Daly et al. 2011). Therefore, we hypothesize that leaders who report lower levels of efficacy will have a higher likelihood of sending and receiving difficult professional relationships (hypothesis 5).

Demographic Characteristics Associated with the Formation of Negative (Difficult) Ties

Social-network studies in education have suggested that in addition to the factors described above, the formation of social relationships may also be dependent on demographic characteristics (Moolenaar et al. 2014; Spillane et al. 2012). We focus on work level, gender, and years of experience as demographic characteristics that may potentially affect leaders' likelihood to be engaged in difficult professional relationships.

Work level.—Previous research in organizations (Lazega and van Duijn 1997; Moore 1990) and education (Coburn and Russell 2008; Daly and Finnigan 2011; Spillane et al. 2012) suggests that individuals' formal positions (e.g., roles, grade levels, and work levels) may be related to the extent to which they are engaged in social relationships. For instance, Lazega and van Duijn (1997) found that lawyers were more often sought out for advice when they held higher hierarchical positions. Similarly, the number of relationships in which leaders are involved may be partly determined by the requirements and affordances provided by their work levels (district office vs. school site) and by way of professional development and opportunities to interact (Daly and Finnigan 2011; Honig 2006; Spillane et al. 2012). As district leaders ascend in the district hierarchy, they are expected to relay important policy and organizational information from the district office to site principals and broker information among other leaders in the district (e.g., Coburn and Russell 2008; Finnigan et al. 2013). Given their formal responsibilities, district leaders not only are likely to generate more relational traffic, but they also run a higher risk of being involved in more difficult professional relationships simply given the volume and variety of their interactions. We therefore hypothesize that district-

office leaders will have a higher likelihood of sending and receiving difficult professional relationships than principals (hypothesis 6).

Gender.—Research outside education has indicated that the likelihood of being involved in social relationships may be associated with gender (Ibarra 1995; Moore 1990; Parker and De Vries 1993; Pugliesi and Shook 1998) and that, in general, women tend to be engaged in more social relationships than men (Mehra et al. 2001). Because these studies have all taken place outside education, we acknowledge that these findings may not hold for educational settings, especially because educational contexts are typically characterized by a high percentage of women (e.g., Moolenaar 2010). Research in schools has provided limited evidence of gender differences between male and female teachers in the number of relationships they send and receive (e.g., Moolenaar et al. 2014). Yet, studies have suggested gender differences in educational leadership style, with women tending to engage in more transformational leadership styles and men interacting on a more transactional basis (Ostos 2012). This difference is potentially important, as transformational leaders are more likely to be engaged in a greater number of social relationships (Leithwood and Jantzi 2008). Based on the limited work available, we include a hypothesis regarding gender differences. We hypothesize that female leaders, because of their larger comparative numbers in the education workforce and an identified tendency toward transformational leadership, will have a higher likelihood of sending and receiving difficult professional relationships than male leaders (hypothesis 7).

Experience.—Finally, the likelihood of forming social relationships may also be affected by the demographic characteristic of seniority, or years of experience in a particular organization (see Lazega and van Duijn 1997). In educational settings, recent work suggests that more experienced educators who have had more opportunities to develop and strengthen relationships tended to have more social relationships and possessed more diverse networks than less experienced educators (Daly et al. 2014). Accordingly, we hypothesize that educational leaders who have been working in the district for a longer period of time will have had more time and opportunities to build their networks and, consequentially, will have a higher likelihood of sending and receiving difficult professional relationships than educational leaders with fewer years of experience in the district (hypothesis 8).

Dyadic Characteristics Associated with the Formation of Negative (Difficult) Ties

In addition to individual factors affecting the likelihood of forming negative ties, we also argue that similarities between individuals may result in the formation of a negative tie. This suggestion is grounded in the concept of network homophily. Homophily literature builds on the notion that individuals are more

likely to develop and maintain social relationships with others that are similar to them in a specific attribute such as gender, organizational unit, or educational level (Marsden 1988). Similarly, individuals who differ from each other in a specific attribute are less likely to initiate relationships, and when they do, these heterophilous relationships tend to dissolve faster than homophilous relationships (McPherson et al. 2001). Further, recent work on negative ties suggests that difficult relationships are more likely to occur with outgroup members than with those in similar groups to one's own (Yap and Harrigan 2015). In this study we focus on two types of similarity that may define leaders' relationships and influence formation of negative ties: work level and gender similarity.

Work-level similarity.—Studies suggest that educators who work at a similar level are more likely to interact with each other than with others who occupy different positions (Coburn and Russell 2008; Daly and Finnigan 2011). School-level and district-level leaders may attend different professional-development initiatives and leadership meetings (Daly et al. 2010) and therefore may have fewer shared experiences and opportunities to interact with one another, whereas leaders who share similar work levels may be in more frequent contact. These shared experiences and interactions may result in a higher likelihood for leaders from similar work levels to form relationships with each other (Suitor and Pillemer 2000), including negative ties. Therefore, we hypothesize that leaders who work at the same work level (district office or school site) will have a higher likelihood of forming difficult professional relationships than leaders who work at different work levels (hypothesis 9).

Gender similarity.—Gender similarity between leaders may affect the likelihood of their developing difficult professional relationships (e.g., Spillane et al. 2012). Often, organizations are found to be segregated along gender lines (McGuire 2000), and in education, studies have found that same-gender work relations are more frequent and intense than opposite-gender relationships (Heyl 1996). As a result, we hypothesize that leaders will have a higher likelihood of forming same-gender difficult professional relationships than opposite-gender relationships (hypothesis 10).

Method

Sample and Context

The data for this study were gathered in 2011 at an underperforming urban fringe school district in California that serves a culturally and socioeconomically

diverse student population. A large number of schools in this district have been identified as in need of improvement since 2010. There has also been a 20% turnover rate of teachers, leaders, and managers over the past 5 years (comparable to other districts in the region). In 2010, the district prioritized shared decision making across departments and schools. Given the district's intentional focus on interactions, as is the case in many other districts, better understanding the patterns of communication and obstacles provides important practical applicability.

We invited a total of 96 district leaders and school-site principals to participate in the study. Of the 96 educational administrators, 78 completed the survey, reflecting a response rate of approximately 81%. These 78 administrators worked at either the district office ($N = 34$, response rate = 83%) or as a principal at one of the district's school sites ($N = 44$, response rate = 80%). Of the sample, 62.8% was female. Administrators had between 1 and 37 years of experience working in the district ($M = 13.2$ years, $SD = 8.7$). Additional sample demographics and mean scores are presented in table 1.

Instruments

Social networks.—We collected data on the relationships among district-office and site leaders using a social-network survey. The leaders were invited to assess the quality and frequency of interaction on network relationships such as advice, expertise, and difficult professional relationships. As this study attempts

TABLE 1

<i>Sample Demographics of Educational Leaders</i>	
Educational Leaders	N (%)
Work level:	
District administrator	34 (43.6)
Principal	44 (56.4)
Gender:	
Male	29 (37.2)
Female	49 (62.8)
Years in district:	
1–8	26 (33.3)
9–14	26 (33.3)
15–37	26 (33.8)

NOTE.— $N = 78$.

to explore and understand difficult professional relationships, we developed a question that would address a negative relationship while limiting the risk of respondent attrition due to the nature of the question (Labianca and Brass 2006; Moolenaar et al. 2012). In addition, we crafted a question that would represent the negative affectivity typically associated with negative ties without making respondents unnecessarily uncomfortable. Therefore, in examining the negative ties among educational leaders, we asked respondents: "With whom do you have a difficult professional relationship?," followed by a clarifying prompt: "By 'difficult' we mean a relationship in which you have to exert significant extra effort to communicate, share perspectives, and/or come to a common understanding about important topics." Our field tests of this negative-relationship item with practicing administrators suggested that the question tapped into the negative affectivity we were interested in without turning off respondents. We further validated the network question by randomly selecting 25% of the administrators to identify both someone with whom they had a difficult relationship and to name a colleague they believed might also identify them as someone with whom they have a difficult professional relationship. Once collected, we compared these data with the actual network data of nominators and their nominees to see the level of match. This resulted in an 80% co-occurrence, providing another level of validation for the question. We acknowledge that there is room for misinterpretation of the relationship and that this difficult relationship does not map perfectly onto a more traditional definition of a negative tie. However, as this work is one of the first forays into this area for social networks in education and leadership, the study provides an opportunity for theory building in this area. For ease of response, we provided respondents with a roster with the names of the district-office leaders and the school-site principals. Respondents could indicate which of those they had a difficult professional relationship with by selecting any of the names of their fellow administrators. The number of nominations that respondents could make was unlimited.

Trust.—Trust among educational administrators was assessed with a modified scale that has been widely used in education (Goddard et al. 2000). The items assess the degree to which educational administrators perceive their colleagues as being open, honest, trustworthy, and reliable. This approach allowed us to measure the collective trust among the administrators across the district, as one of the district's goals was to foster better communication between leaders from different groups, departments, and schools. A sample item to measure trust is, "Even in difficult situations, administrators can depend on each other." The scale included a Likert-type scale, ranging from 1 (strongly disagree) to 6 (agree). The scale had a high internal consistency (4 items, $\alpha = .87$). Principal component analysis (PCA) with varimax rotation resulted in a single-factor solution that explained 60.9% of the variance.

Innovative climate.—The innovative-climate scale was composed of items targeted at the district office and principals and was based on a modified version of a well-used scale (Bryk et al. 1999; Consortium on Chicago School Research 2004). These items reflect the extent to which educational administrators perceive their environments to be open to innovation and to which they are willing to take risks to improve the organization. The items were targeted once at the district office and again at the principals to measure the perceived level of innovative climate at the district office and of the principals. As previous studies on district-wide reform indicate variation in the perception of innovative climate between and among educational leaders at different levels (see Daly and Finnigan 2011; Moolenaar et al. 2011), we drew on an instrument that targeted district offices and principals separately. For example, a sample item to measure innovative climate is, “Administrators in the district office are generally willing to try new ideas,” and another version for principals is, “Principals are generally willing to try new ideas.” Respondents could rate the items on a Likert-type scale, ranging from 1 (strongly disagree) to 6 (agree). The internal consistency of the scale was high for both the district office (7 items, $\alpha = .96$) and the principals (7 items, $\alpha = .96$). For the “innovative climate—district office” construct, PCA with varimax rotation yielded a single-factor solution that explained 80.0% of the variance. For the “innovative climate: principals” construct, PCA with varimax rotation yielded a single-factor solution that explained 81.3% of the variance. The correlation between both types of innovative climate was found to be high ($r = .71, p < .01$), and PCA with direct oblimin rotation in which both scales were included yielded a two-factor solution that explained 69.7% of the variance, with the original items loading highly onto their respective a priori scales (for innovative climate: district office, .73–.97; and for innovative climate: principals, .63–.98).

Efficacy.—We used a modified version of the Leadership Efficacy Scale (Daly et al. 2014; Tschannen-Moran and Gareis 2004) to examine perceptions of efficacy for instructional improvement. The efficacy scale had four items, all beginning with the sentence stem, “In your current role as a leader, to what extent can you . . .” Responses for each item were based on a 9-point Likert scale ranging from 1 (none at all) to 9 (a great deal). The scale had a high reliability (4 items, $\alpha = .92$), and PCA with varimax rotation yielded a single-factor solution explaining 80.8% of the variance. The items and factor loadings of all principal-component analyses for each of the constructs are summarized in table 2.

Demographic variables.—Several demographic variables were included to examine their influence on the likelihood of having difficult professional relationships: years of experience in the district, work level (district office/school site), and gender (male/female).

TABLE 2

Items, Factor Loadings, and Reliability (Cronbach's Alpha) of the Scales

	Factor Loadings
Trust ($\alpha = .87$):	
1. Administrators typically support each other.	.80
2. Even in difficult situations, administrators can depend on each other.	.81
3. Administrators trust each other.	.88
4. Administrators are open with each other.	.84
5. Administrators have faith in the integrity of their colleagues.	.79
6. Administrators are suspicious of each other. (Recoded.)	.52
7. When administrators tell you something, you can believe it.	.77
Innovative climate: district office ($\alpha = .96$):	
1. Administrators in the district office are continuously learning and seeking new ideas.	.87
2. Administrators in the district office are generally willing to try new ideas.	.89
3. Administrators in the district office are constantly trying to improve their leadership.	.90
4. Administrators in the district office have a positive "can-do" attitude.	.89
5. Administrators in the district office are willing to take risks to make the district better.	.90
6. Administrators in the district office are encouraged to stretch and grow.	.90
7. Administrators in the district office are continuously developing new approaches to support instruction.	.91
Innovative climate: principals ($\alpha = .96$):	
1. Principals are continuously learning and seeking new ideas.	.82
2. Principals are generally willing to try new ideas.	.85
3. Principals are constantly trying to improve their leadership.	.84
4. Principals have a positive "can-do" attitude.	.87
5. Principals are willing to take risks to make the district better.	.76
6. Principals are encouraged to stretch and grow.	.70
7. Principals are continuously developing new approaches to support instruction.	.89
Efficacy ($\alpha = .92$):	
<i>In your current role as a leader, to what extent can you . . .</i>	
1. facilitate learning?	.86
2. generate enthusiasm for a shared vision?	.83
3. improve achievement?	.95
4. improve achievement with English-language learners?	.95

Data Analysis

As we explore the factors associated with the formation of difficult professional relationships, we use social-network analysis to visualize relationship patterns and to calculate network measures that represent individual leaders' connections. We then use descriptive statistics along with the network measures to describe the characteristics of the study sample. Finally, we use multilevel network modeling that accounts for the interdependency of social-network data to test the study hypotheses.

Social networks.—We first provide a visualization of the difficult professional ties of the leaders using Netdraw (Borgatti 2002) to highlight the pattern of difficult ties across the leadership group. To quantify the network of difficult professional relationships between district and site administrators, we calculated various network measures using the UCINET 6.0 software package (Borgatti et al. 2002). For each administrator, we calculated outdegree, indegree, and ego reciprocity. The social-network measure of outdegree corresponds to the number of colleagues the respondent nominated as people with whom they had a difficult relationship and can be interpreted as an indication of individual activity. In other words, leaders with high outdegree nominated more individuals as being difficult than leaders with low outdegree. The measure of indegree reflects the number of leaders who nominated a particular person as being difficult and can thus be regarded as an indication of individual popularity. That is, leaders with high indegree are viewed as being more difficult than leaders with low indegree. Ego reciprocity reflects the percentage of an administrator's difficult ties that are reciprocated and is calculated as the ratio of reciprocated relationships to the total number of relationships for an individual. Ego reciprocity ranges from 0 (none of the administrator's difficult relationships are reciprocated) to 100 (all of the administrator's difficult relationships are reciprocated).

Descriptive statistics.—We calculated descriptive statistics for the scales assessing trust, innovative climate (district and principal), and efficacy and for network centralities.

Multilevel p2 model.—Because of the interdependency of the data of the dependent variable (relationships among individuals), the assumption of data independence that underlies conventional regression models is violated. Therefore, we conducted p2 modeling to test the effect of individual and dyadic characteristics on having difficult professional relationships (van Duijn et al. 2004). We used the p2 program within the StOCNET software suite to run the multilevel p2 models (van Duijn et al. 2004; Zijlstra 2008; Zijlstra et al. 2006).

The p2 model is similar to a logistic-regression model but has been developed to handle dichotomous dyadic outcomes. In contrast to a univariate logistic-

regression model, the p2 model controls for the interdependency that resides in social-network data. The p2 model regards sender and receiver effects as latent (i.e., unobserved) random variables that can be explained by sender and receiver characteristics (Veenstra et al. 2007). In the p2 analyses, the dependent variable is the aggregate of all the nominations a network member sent to or received from others. A positive effect thus indicates that the independent variable (e.g., an administrator's perceived level of trust) has a positive effect on the likelihood of having a relationship (in this study, a difficult professional relationship).

The current study addressed two levels of analysis: the dyadic (relational) level and the individual level represented by 6,006 dyadic relationships (level 1) and 78 respondents (level 2), respectively. To examine the influence of individual and dyadic variables on the likelihood of having difficult professional relationships, we estimated a single p2 model. Individual covariates are characteristics of individuals, such as trust, innovative climate, efficacy, and demographics, that may influence the number of difficult ties that an administrator sends or receives. Individual covariates can be included for the sender of a relationship (sender covariates) and the receiver of a relationship (receiver covariates). A relationship covariate yields information on the similarity of two individuals on a given (demographic) characteristic, such as similarity of work level or gender.

Interpretation of p2 estimate.—The parameter estimates in p2 models can be interpreted in the following way. The main parameters of interest concern the sender effects and receiver effects, meaning effects that signify the probability of sending or receiving a difficult relationship nomination. A positive parameter estimate thus signifies a positive effect on the probability of a difficult relationship (Veenstra et al. 2007). For example, a positive sender effect of work level (dummy coding; district office/school site) would indicate that administrators working at the school sites (represented by the highest dummy code) would have a higher probability of sending difficult professional relationships than administrators working at the district office (represented by the lowest dummy code). As sender and receiver covariates, we include leaders' perceptions of trust, innovative climate, efficacy, and demographics.

We include work level and gender as relational covariates to assess the homophily effects. For the relationship covariates, the p2 software constructs dyadic matrices based on the absolute difference between two respondents. For example, the relationship between district-office administrators and principals would be coded as a relationship between educators who work at different work levels. To facilitate the interpretation of the model, we labeled the dyadic parameters "different work level" and "different gender." A negative parameter estimate for different gender, for instance, indicates that a difference in gender is related to a lower probability of having a difficult relationship (e.g.,

administrators with different genders would be less likely to report having a difficult professional relationship, and conversely, difficult professional relationships would be more likely among same-gender administrators). As such, negative parameters would provide evidence of the hypothesized homophily effects.

In p2 models, two parameters are included by default, as they control for important network effects. The first default parameter is the overall mean density effect. A positive estimate for the density effect indicates that, in general, the sample networks are rather dense, and a negative density effect reflects that the networks are rather sparse. The second default parameter is the overall mean reciprocity effect. A positive estimate for the reciprocity effect suggests that symmetric relationships are more likely to occur than asymmetric relationships and vice versa. Furthermore, p2 models include information on differences in nominating (sender variance), in receiving nominations (receiver variance), and the extent to which people who send more relationships also have a higher probability of receiving relationships (sender-receiver covariance).

As suggested by Long (1997), we used the Wald statistic that is then compared to the chi-square distribution with one degree of freedom to calculate the significance of the effects. In addition, to aid interpretation of statistical significance, we report quantiles from the distributions of estimation samples, which provide the Bayesian analogue to a confidence interval. The estimate will be statistically significant ($p < .05$) if the quantiles between 2.5 and 97.5 do not include 0.

Results

Sociograms of Sending and Receiving Difficult Ties

We first provide two network sociograms of difficult ties between the leaders to illustrate the pattern of sending and receiving difficult ties (see fig. 1). In this figure, nodes represent individual leaders, and lines represent a difficult tie between leaders with an arrow indicating the direction of a tie. The nodes are colored by work level, with black (red in the online version) representing district leaders and white (blue in the online version) representing principals. (A color version of this figure is available online.) Both maps show that throughout the network, connectedness of difficult ties is relatively sparse, and the network density measure reflects that only 1.9% of all possible ties are present in the network. In addition to the sparse nature of the network, there are a few isolates, with 24% of the leaders not sending or receiving any difficult tie nominations.

The maps also present varied patterns of difficult ties, with some educational leaders sending many difficult relationship nominations (e.g., leader

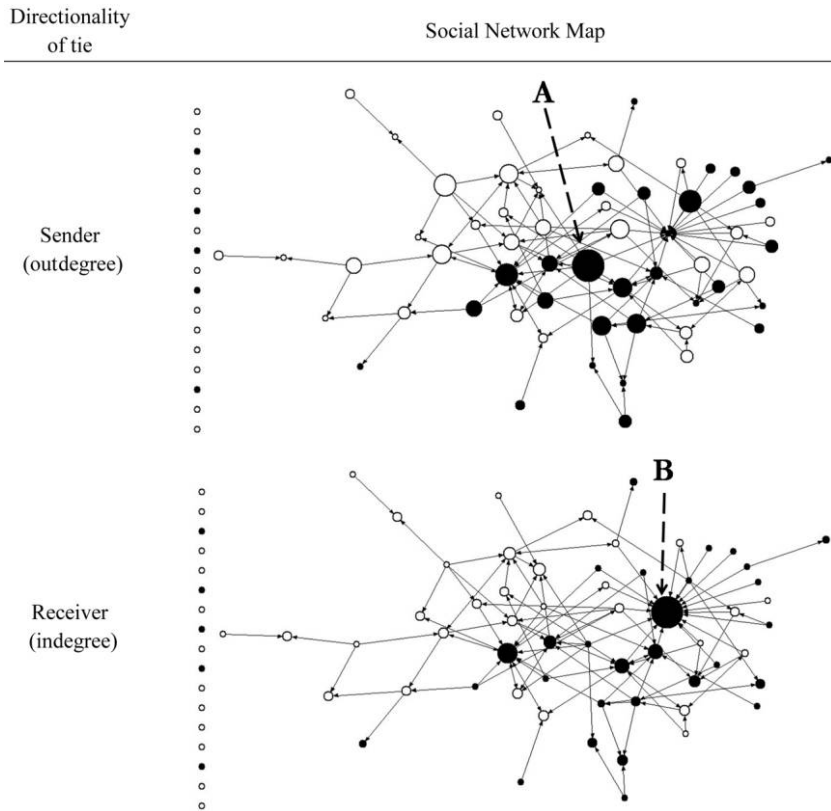


FIG. 1.—Social-network maps of sending and receiving difficult ties between leaders. $N = 78$. For the sender map, nodes are sized by outdegree (sender) and colored by role (black [red in the online version] = central office administrator; white [blue in the online version] = site principal). The larger the nodes (e.g., node A) the more difficult ties sent. For the receiver map, nodes are sized by indegree (receiver) and colored by role (black [red] = central office administrator; white [blue] = site principal). The larger the nodes (e.g., node B) the more difficult ties received. Nodes listed at the left-hand side of the maps are isolates, meaning they did not indicate anyone with whom they have a difficult relationship, nor did anyone identify them as an individual with whom they have a difficult relationship. A color version of this figure is available online.

A in the sender map), while other leaders are frequently seen as more difficult (e.g., leader B in the receiver map). In addition, in both the sending and receiving networks, it appears that there is more variation among district leaders in their involvement in difficult ties than among school-site leaders. Spe-

cifically, some of the district leaders tend to either send or receive a large proportion of difficult ties in comparison to other district leaders, whereas the majority of the school-site leaders tend to have relatively similar amounts of sent and received difficult ties. Finally, district leaders appear to be slightly more central (red nodes positioned in the center of both sociograms), meaning that they have a higher likelihood of being in difficult ties. To verify and quantify these visualizations, we draw on additional analysis of the data.

Social-Network Descriptives and Correlations

Results from the descriptive analyses (see table 3) suggest that on average, administrators indicate 1.4 difficult professional relationships with others at the district ($M = 1.4$, SD outdegree = 1.7, SD indegree = 2.7). Administrators reported having a minimum of 0 and a maximum of 8 people with whom they had difficult professional relationships (outdegree). Administrators received between 0 and 19 nominations as a person with whom others have a difficult professional relationship (indegree). Findings with regard to ego reciprocity show that less than 5% of the administrators' difficult professional relationships were reciprocated ($M = 4.2\%$, $SD = 11.8\%$). The overall density of the network was 1.9%, reflecting that of the 6,006 potential difficult relationships between the administrators, only 112 were actually present.

Correlation results (see table 4) indicate weak positive correlations among the social-network properties (ranging from $r = .10$, ns , to $r = .31$, $p < .05$) with the highest correlation between outdegree and ego reciprocity, meaning that a leader who nominated more people with whom they had a difficult professional relationship (higher outdegree) also has a higher probability of those

TABLE 3

Survey Descriptive Statistics

	Min.	Max.	<i>M</i>	<i>SD</i>
Network characteristics:				
Outdegree	0	8	1.44	1.68
Indegree	0	19	1.44	2.74
Ego reciprocity (%)	0	66.7	4.20	11.80
Attributes:				
Trust	3	6	4.68	.68
Innovative climate: district office	1	6	4.96	.91
Innovative climate: principals	1	6	5.14	.90
Efficacy	2	9	7.04	1.88

NOTE.— $N = 78$.

TABLE 4

Correlations and Reliability (Cronbach's Alpha) for the Study Variables

	1a	1b	1c	2	3a	3b	4
1a. Outdegree10	.31*	-.28*	-.31*	-.15	.06
1b. Indegree	29*	.10	-.02	-.11	.08
1c. Ego reciprocity		01	-.10	-.05	.17
2. Trust			27*	.30**	.12
3a. Innovative climate: district office				70**	.14
3b. Innovative climate: principals					29**
4. Efficacy							. . .

NOTE.— $N = 78$.

* $p < .05$.

** $p < .01$.

people reporting a difficult relationship with that leader (higher ego reciprocity). Among these social-network properties, outdegree is negatively and significantly correlated with trust ($r = -.28$, $p < .05$) and innovative climate: district office ($r = -.31$, $p < .05$), meaning that leaders who report more difficult professional relationships are also more likely to report less trust and a less innovative climate at the district-office level.

The following presents findings from the p2 analysis, which tests the extent to which study variables affect the probability of having difficult professional relationships (see table 5). Finally, we close the section by summarizing the hypotheses and corresponding findings.

Density and Reciprocity of Difficult Ties

Density (H1).—Findings indicate a negative overall mean density effect, indicating that the network of difficult professional relationships tends to be sparsely connected, reflecting the previously reported network descriptives and confirming our first hypothesis.

Reciprocity (H2).—Findings indicate that, in our sample, difficult professional relationships have a higher tendency to be mutual than unidirectional, as evidenced by the positive overall mean reciprocity effect, confirming our second hypothesis.

Characteristics Associated with Sending Difficult Ties

We now examine the characteristics related to the likelihood that leaders will report difficult professional relationships with other leaders.

TABLE 5

Parameter Estimates of the p2 Model, Displaying the Effect of Individual, Demographic, and Dyadic Characteristics on the Probability of Having a Difficult Professional Relationship

	DIFFICULT PROFESSIONAL RELATIONSHIP		
	Parameter Estimate	SE	95% CI
Overall mean:			
Density	-6.21	1.98	
Reciprocity	2.46	.93	
Sender covariates:			
Work level (district/site)	-1.24*	.35	(-1.87/- .52)
Gender (female/male)	-.39	.30	(-.92/.22)
Years of experience at district	-.21	.17	(-.50/.16)
Trust	-.50*	.20	(-.87/- .10)
Innovative climate: district office	-.49*	.17	(-.84/- .20)
Innovative climate: principals	.41*	.18	(.09/.79)
Efficacy	.53*	.19	(.19/.93)
Receiver covariates:			
Work level (district/site)	-.10	.41	(-.97/.57)
Gender (female/male)	.67*	.29	(.07/1.25)
Years of experience at district	.76*	.35	(.07/1.48)
Trust	.61*	.25	(.22/1.19)
Innovative climate: district office	-.09	.19	(-.49/.24)
Innovative climate: principals	-.21	.40	(-.89/.49)
Efficacy	.25	.22	(-.23/.69)
Relationship covariates:			
Different gender (female/male)	.01	.18	(-.34/.36)
Different work level (district/site)	-.35**	.19	(-.74/.02)
Random effects:			
Sender variance	.50	.31	
Receiver variance	2.91*	1.05	
Sender-receiver covariance	-.01	.35	

NOTE.—Examination of 6,006 potential dyadic relations from 78 educational leaders.

* $p < .05$.

** $p = .06$.

Trust, innovative climate, and efficacy (H3, H4, H5).—Our findings show a negative sender effect for trust, meaning that administrators who perceive more trust in the district tend to nominate fewer other leaders with whom they have a difficult professional relationship. In addition, results suggest a negative sender effect for leaders' perceptions of the innovative climate at the district office. In other words, administrators who perceive the district office to be more innovative tend to identify fewer people with whom they have difficult professional relationships. In contrast, we find a positive sender effect for leaders' perceptions of the innovative climate among principals, meaning that adminis-

Negative Relationships between Educational Leaders

trators who perceive principals as more innovative indicate more people with whom they have difficult professional relationships. Contrary to H5, the efficacy results suggest a positive sender effect, meaning that administrators who feel more efficacious tend to identify a higher number of difficult professional relationships.

Work level, gender, and experience (H6, H7, H8).—Findings indicate a significant negative sender effect of work level. This means that on average, leaders who work at the district office (dummy code = 0) have a higher probability of sending difficult professional relationship nominations than leaders at the school sites (dummy code = 1). We found no significant sender effect of either gender or years of experience working at the district on the likelihood that leaders would report difficult professional relationships with other leaders.

Characteristics Associated with Receiving Difficult Ties

We also analyzed the characteristics related to the likelihood that a leader would be nominated by another leader as someone with whom they have a difficult professional relationship.

Trust, innovative climate, and efficacy (H3, H4, H5).—Results indicate a positive receiver effect for trust, meaning that leaders who perceive more trust in the district are also more likely to receive nominations than a person with whom others have a difficult professional relationship. We find no significant receiver effects for leaders' perceptions of innovative climate or efficacy.

Work level, gender, and experience (H6, H7, H8).—Results indicate a significant positive effect of gender. This means that on average, female leaders (dummy code = 0) have a lower probability of receiving difficult professional relationship nominations than male leaders (dummy code = 1). In addition, findings show a positive receiver effect for years of experience in the district, meaning that the longer a leader works in the district, the more likely he or she is to be nominated as a person with whom others have a difficult professional relationship. We found no significant receiver effect for leaders' work levels.

Dyadic Characteristics Associated with Difficult Ties

Work level and gender (H9, H10).—For the relationship covariates, results show no significant homophily effects for either work level or gender, suggesting that administrators are as likely to nominate administrators from the same and another work level or gender. However, the effect of work level is

marginally significant ($p = .06$), perhaps suggesting a trend toward homophily among leaders at the same work level. If this effect were significant, it would mean that leaders would tend to have within-group nominations (e.g., leaders in the district office have a higher likelihood of having difficult professional relationships with other district leaders, and likewise for site leaders).

Finally, we should note that there is low variation among administrators in the number of nominations that they make of people with whom they have difficult professional relationships, as indicated by the nonsignificant sender variance effect. In contrast, there is considerable variation among leaders in the number of difficult relationship nominations that they receive, as suggested by the significant receiver variance effect. In general, the network is characterized by nonsignificant sender-receiver covariance parameter, meaning that there is no apparent relationship between the number of nominations that leaders make and the number of nominations they receive. In general, these findings reflect the results that were derived from the network descriptive statistics.

Summary of Hypotheses and Findings

To conclude, table 6 provides a summary of the study's hypotheses and findings. Our findings fully support three of the hypotheses, those regarding the density and reciprocity of difficult professional relationships and the similarity effect of work level (marginally significant). Four of the hypotheses—those regarding trust, innovative climate, work level, and years of experience—were partially supported. Finally, the hypotheses on efficacy, gender, and gender similarity were not supported.

Discussion

In this unique exploratory study, we examined difficult professional relationships among educational leaders and characteristics that may contribute to the formation of such ties. This work makes a significant methodological and empirical contribution to both the educational leadership literature and the field of social networks, which to date have limited work regarding negative ties. Our findings suggest that there are a number of characteristics associated with leaders who are likely to be involved in difficult ties. In short, senders of difficult ties tend to be district-office leaders who perceive less trust and a less innovative climate among themselves but a more innovative climate among

Summary of Hypotheses and Findings

24

H7: Because they have more relationships, <i>female leaders</i> overall will have a <i>higher likelihood of sending and receiving</i> difficult professional relationships than male leaders.	Not supported	<i>Male leaders</i> tend to <i>receive more</i> difficult relationships than female leaders.
H8: Educational leaders who have been <i>working in the district for a longer period of time</i> will have had more time and opportunities to build their networks and consequently may also have a <i>higher likelihood of sending and receiving</i> difficult professional relationships than educational leaders with fewer years of experience at the district.	Partially supported	Leaders who have been <i>working in the district longer</i> tend to <i>receive more</i> difficult relationships than those with fewer years of experience in the district.
Hypotheses regarding the dyadic characteristics associated with difficult professional relationships: H9: <i>Leaders who work at the same level</i> (district office or school site) will have a <i>higher likelihood</i> to form difficult professional relationships than leaders who work at different levels.	Supported ^a	Leaders tend to <i>form difficult relationships</i> with leaders <i>working at the same level</i> (district / site).
H10: Leaders will have a <i>higher likelihood to form same-gender difficult professional relationships</i> than opposite-gender relationships.	Not supported	Leaders tend to equally form difficult relationships with leaders of the same and the opposite gender.

^aMarginally significant.

principals and those who have higher efficacy. The receivers of difficult ties (those who were nominated as being difficult) are more likely to perceive a more trusting environment, be male, and have been in the district a longer period of time. This work may offer hints on how to limit such negative relationships that are likely to derail improvement efforts by district and school leaders.

The Role of Trust in Difficult Ties

Leaders who perceive limited trust among colleagues were also more likely to report difficult relationships with other leaders in the district. This finding is in line with literature that suggests that leaders who perceive lower levels of trust also tend to have fewer positive professional relationships within their organizations (Troman 2000). As low-trust environments are associated with difficulty in reaching shared perspectives and therefore with conflicts, it is not surprising that leaders who perceive less trust are also likely to identify difficult professional relationships (Bryk and Schneider 2002). The finding about the increased likelihood of sending a difficult tie adds to the growing list of significant issues associated with low trust in underperforming schools and districts, including lower academic outcomes and a lack of collaboration (Moolenaar and Slegers 2010).

In contrast, we also found that leaders who perceive a more trusting environment are more likely to be nominated as being difficult, which on the surface seems unusual. One way to interpret this is to combine this finding with the former one, in which leaders with low trust send more difficult ties. Given that those individuals who perceive low trust tend to send difficult ties, it may follow that those who perceive high trust would receive these difficult tie nominations. This suggests that the mismatch of trust perceptions among leaders may result in the formation of difficult ties. In other words, a mismatch in perceptions might not just inhibit the development of relationships but may also result in a relationship becoming difficult. In support of this line of argument, Coffin and Leithwood (2000) examined the situated learning of principals and found that relationships that were mutually trusting augmented principal professional learning. The opposite also held: relationships that were distant or aloof inhibited leader learning. As such, a lack of alignment in regard to perceptions of trust between leaders not only negatively impacts overall effectiveness and coherence (Davis 1998) but also inhibits professional learning (Coffin and Leithwood 2000), which makes improvement within a district that much more difficult. So not only is trust in general important, but that trust needs to be mutual between leaders.

Mismatch in Innovative Climate

We found that leaders who perceived the district office to be less innovative were more likely to nominate others with whom they had a difficult professional relationship. This finding suggests the importance of the district office in supporting an innovative climate. In contrast, leaders who perceived the principals to have a greater innovative climate were more likely to send more difficult ties. This may indicate that the district was characterized by a norm in which it was expected for district-office administrators to be innovative, whereas an innovative climate among principals may have been met with more resistance. If principals are seen as pushing the innovation agenda in a district, this may result in more difficult ties among leaders in the district. As has been shown in other work (e.g., Daly and Finnigan 2011), misalignment between perceptions and expectations may result in the formation of difficult relationships.

Efficacy and Difficult Ties

Contrary to our hypothesis that leaders who report lower levels of efficacy will send and receive more difficult ties, we found that leaders with a higher sense of efficacy tended to send more difficult ties, suggesting that leaders with a greater sense of efficacy are more likely to indicate others with whom they have a difficult professional relationship (e.g., Bandura 1993; Leithwood and Jantzi 2008). It could be that high self-efficacy may reduce one's goal discrepancy and motivation to improve one's knowledge and skills as a result of a lack of self-doubt about one's ability that may support learning and reflection, which may result not only in an overestimation of one's own capacity but also in an underestimation of others' performance (Vancouver and Kendall 2006; Wheatley 2002). This overconfidence may reinforce leaders' self-perception of high efficacy and their underestimation of others' efficacy (Kennedy et al. 2011). As such, these high-efficacy leaders may indicate that their colleagues are less capable, leading to nominations of difficult working relationships. Earlier research has suggested that highly efficacious leaders may be more likely to successfully enact reform efforts, as they persist longer when they encounter obstacles (Tschannen-Moran and Gareis 2004). This may in part suggest that these leaders may be less afraid or more inclined to engage in difficult professional relationships to achieve their goals. It may also be the case that highly efficacious leaders are less aware of their blind spots, pushing forward continuously and straining relationships over time (Devos et al. 2013).

This study suggests that efficacy may have unintended consequences for tie formation.

Demographic Characteristics and Difficult Ties

Results suggest that leaders who work at the central office are, on average, more likely to indicate others with whom they have difficult professional relationships. It may be that district-office leaders are simply involved in more relationships than school-site leaders, given that their positions inherently stretch across the system (Finnigan et al. 2013), and they therefore have an increased likelihood of difficult professional relationships. It may be difficult for district leaders to cut difficult ties due to work flow and position responsibility (Labianca and Brass 2006). This finding seems to affirm earlier work showing that individuals who reside at the top of the formal hierarchy, as would be the case for the district office, are more likely to be under greater scrutiny and the target of a lack of trust than those who occupy positions lower in the formal hierarchy. Further complicating the situation, those in higher positions in the hierarchy also carry a greater burden for fixing issues related to difficult relationships (Tschannen-Moran 2004). This requires a unique set of interpersonal skills that many leaders may not possess. We also found that leaders at the same work level tended to form difficult professional ties (marginally significant), supporting previous studies and indicating the importance of not only vertical interactions (district to site) but also horizontal relationships between and among site leaders. Findings suggest that district-office leaders are uniquely positioned to withstand targeting, to model positive interactions, and to create the conditions for interactions to occur within and across levels. In turn, opportunities for principals to work together within groups are important outside of traditional district-office-site leadership team meetings.

Our findings suggest another important message regarding the role of experience on the formation of a difficult tie. We found that those leaders who were male and had longer tenure in the district tended to be nominated as those with whom others had difficult relationships. While recent work on educational reform suggests that underperformance may contribute to turnover of educational leaders (Branch et al. 2013), in our case, longevity in position might, in fact, plant a seed that may gradually grow into a host of negative, toxic interpersonal relationships. Thus, while it is important to support new leaders, providing opportunities to reengage leaders who have been in the district for longer periods of time may also be a useful lever in district reform.

Last, our work indicates the reciprocated nature of difficult ties, meaning that if someone identifies another as an individual with whom they have a difficult tie, the first person is also nominated. This seems to suggest a form

of cognitive consistency in which one maintains relational balance and reciprocity with regard to a difficult relationship (Yap and Harrigan 2015). As leaders interact with one another, they form predictable patterns for how each will respond to another. If the response is negative, then the leader is likely to also respond in a negative manner. As such, providing opportunities to disrupt negative interactions so that leaders have the opportunity to have their predictions challenged and to develop a different set of expectations is important in reducing the formation of difficult ties (Yap and Harrigan 2015).

Practical Implications

Implications for both practice and policy emerge from our study. First, schools and districts should be aware of the potential existence of difficult ties between district and school leaders. Awareness of challenging relationships allows leaders to potentially interrupt or resolve these difficult interactions. Network data of this kind provide evidence and opportunities for identifying and disrupting these potentially destructive ties in a way that has not been used in the past. Districts may consider prioritizing strategies that help disrupt a network of negative ties before these relationships spread. Illuminating challenging relationships in districts and establishing norms for leader interactions may minimize the number and impact of difficult ties and the negative influences that may escalate to the larger team. This also suggests a need for capacity building that addresses negative relationships clearly and openly at the system level, including understanding the antecedents of difficult ties (e.g., low trust and innovative climate). One takeaway from our exploratory case study is for leaders to pay explicit attention to mismatched perceptions of trust and innovative climate across the district. Trust and innovative climate are two fundamental elements in creating a learning organization where members are open to sharing new ideas and to taking risks in support of better practice. Low levels of trust and of perceptions of an innovative climate, and misperceptions between the two, can serve as bellwethers for the development of difficult ties, which can inhibit both vertical and horizontal communication.

Another implication involves increasing levels of trust within a district. Administrators and school leaders should work together to promote trust between school sites and the district. In our exploratory case, trust played a substantial role in explaining the formation of difficult ties. Building cohesion with trust and aligning perceptions appears important. Equally critical in this vein is that the literature suggests that those who are in positions of power in the hierarchy must take the first step in rebuilding and repairing trust (Tschannen-Moran 2004). This idea is particularly important, as leaders in the district office were often identified as those with whom others had difficult ties.

The same idea also holds for aligning perceptions of the district's climate of innovation and risk tolerance. It appears from our study that better aligning school leaders' and district administrators' perceptions and expectations of trust and innovative climate may inhibit the formation of difficult ties. Hence, our work indicates the importance of creating learning partnerships between and within the district office and principals to build shared beliefs and a sense of community, which in turn may reduce the formation of negative relationships (Honig 2006). This, of course, also has significant implications for leadership training programs, which typically do not include explicit instruction on interpersonal skills.

It may be important for policymakers to take into account the context in which reforms are—and should be—implemented. Providing districts and schools with sufficient time and means to implement reforms may help them to create a proper foundation for long-lasting, sustainable reform. Moreover, while accountability policies may focus on the technical aspects of reform, social aspects are also important supplements to enhance the work.

Delimiters and Implications for Future Research

Given the sensitive nature of the relationships, leaders may be more or less inclined to report these relationships, and this personal bias may in part be related to leaders' characteristics, such as their formal roles in the organization and their perceptions of trust. Second, educational leaders have varying degrees to which they may develop such difficult relationships and experience them as strong enough to report externally, as doing so may not be a socially acceptable practice. Moreover, research on social relationships, particularly negative ties, involves ethical considerations that need to be approached carefully because, although the data are handled confidentially, individuals do have to provide personal information in order for researchers to configure their social networks. Therefore, this type of data must be considered and interpreted with caution and care (Carolan 2013).

It is also important to note that we examined the likelihood of sending and receiving difficult professional relationships of a group of district-office and school-site leaders together. As such, we need to take into account that our results provide only limited detail on whether these senders and receivers of difficult ties are district-office or school-site leaders. We also found that male leaders were more likely to be found difficult than female leaders, but we do not know whether these nominations were mostly coming from female leaders or whether these nominations were evenly distributed across the district office and school sites. Also, we acknowledge that the context of our study—an underperforming urban fringe school district—might influence the findings related

to difficult ties. Future studies that include a more varied sample in the type and scale of school districts will be important contributions.

Another fair critique is the question of how the term “difficult ties” is interpreted by the leaders in our sample. Although we pilot tested and refined the item with a sample of educational leaders, it is also possible that individuals perceive difficult ties in very different ways. For instance, the concept of a difficult professional relationship, although further defined in our survey, is still open to interpretation (Pustejovsky and Spillane 2009). Additional research using in-depth interviews and field observations may be helpful in deepening our understanding of the nature of difficult ties among educational leaders. Moreover, although we attempted to be as specific as possible, we acknowledge the general nature of the item we used to measure difficult ties and that it may not fully address the multidimensionality of difficult ties. For example, one might experience a difficult tie with someone in a certain context or regarding a certain topic but might not experience this difficult tie in another setting or even relationship. Therefore, we encourage further research that takes into account the degree to which these reported difficult ties show up across multiple settings and relationships. Another suggestion would be to incorporate various prosocial and professional ties as dyadic covariate effects within the analysis of negative ties, thus enhancing our understanding of what other aspects of relationships illustrate the nature of negative ties. In doing so, we would be able to transfer study findings about the differences and similarities of multiple professional relationships in helping districts make reform-related decisions.

Why So Difficult?

Current reform efforts increasingly rely on collaboration of district and site leaders to support alignment and coherence of the reform in multiple settings. While most educational research in this area supports the notion of strong, positive relationships in support of successful reform implementation, recent work also suggests that negative relationships characterized by behavior such as avoidance and gossip may adversely impact such efforts, perhaps even overshadowing the effects of positive ties (Uchino et al. 2012). Coupled with the accountability context and negative dispositions toward continuous reforms in education, difficult relationships will likely continue within the landscape of education and may, in fact, increase with additional large-scale change efforts underway (e.g., Common Core state standards). Better understanding about these relationships, as we have attempted to provide in this study, may help to prevent potential negative effects on educators’ social environments including the hindering of collaboration, professional interaction, and the exchange of instruc-

tional practices. Importantly, creating opportunities to craft alignment and coherence regarding the affective and social elements of change will be critical. Knowing the why of difficult ties may provide early steps for how to disrupt or turn these difficult professional relationships to the benefit of educators and students in intense accountability contexts across the globe.

Note

1. These efforts include cooperation and collaboration (Bryk and Schneider 2002; Hoy and Tschannen-Moran 2003; Tschannen-Moran 2004), group cohesiveness (Zand 1997), and social-network structure (Moolenaar and Slegers 2010; Moolenaar et al. 2014).

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