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Social Networks and Policy Coherence: Administrators' Common Core and Teacher Evaluation Advice Networks

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Abstract: In this study, we aim to deepen understanding of what it would take to develop the relationships, common understandings, and collective expertise that might support district-wide improvement efforts by examining the implementation of the Common Core and a teacher evaluation policy. Drawing on three years of social network data in three

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districts, we find that administrators were more likely to be talking together about teacher evaluation than the Common Core. Further, administrators with more positive views of the potential impact of these policies and their access to the human and technical resources necessary for implementation were more likely to engage in positive information seeking behaviors. These findings have important implications for policies intended to increase instructional coherence in schools and districts.
Keywords: educational policy; district reform; coherence; Common Core; teacher evaluation; social networks

Redes sociales y coherencia de políticas: Common Core y redes de asesoramiento para la evaluación del profesorado de los administradores

Resumen: En este estudio, nuestro objetivo es profundizar la comprensión de lo que se necesitaría para desarrollar las relaciones, los entendimientos comunes y la experiencia colectiva que podrían respaldar los esfuerzos de mejora en todo el distrito al examinar la implementación del Common Core y una política de evaluación de maestros. Basándonos en tres años de datos de redes sociales en tres distritos, encontramos que los administradores eran más propensos a hablar juntos sobre la evaluación de maestros que sobre Common Core. Además, los administradores con opiniones más positivas sobre el impacto potencial de estas políticas y su acceso a los recursos humanos y técnicos necesarios para la implementación tenían más probabilidades de participar en comportamientos positivos de búsqueda de información. Estos hallazgos tienen implicaciones importantes para las políticas destinadas a aumentar la coherencia de la instrucción en las escuelas y distritos.
Palabras-clave: política educativa; reforma distrital; coherencia; Common Core; evaluación docente; redes sociales

Redes sociais e coerência de políticas: Common Core e redes de aconselhamento para avaliação de professores de administradores

Resumo: Neste estudo, pretendemos aprofundar a compreensão do que seria necessário para desenvolver as relações, entendimentos comuns e experiência coletiva que podem apoiar os esforços de melhoria em todo o distrito, examinando a implementação do Common Core e uma política de avaliação de professores. Com base em três anos de dados de redes sociais em três distritos, descobrimos que os administradores estavam mais propensos a conversar sobre avaliação de professores do que o Common Core. Além disso, os administradores com visões mais positivas do impacto potencial dessas políticas e seu acesso aos recursos humanos e técnicos necessários para a implementação eram mais propensos a se envolver em comportamentos positivos de busca de informações. Essas descobertas têm implicações importantes para as políticas destinadas a aumentar a coerência educacional em escolas e distritos.
Palavras-chave: política educacional; reforma distrital; coerência; Common Core; avaliação de professores; redes sociais

Social Networks and Policy Coherence: Administrators' Common Core and Teacher Evaluation Advice Networks

Two central policies across the United States and internationally have been the adoption of common academic standards for student learning (Hargreaves et al., 2010; Volante, 2012) and new systems for teacher evaluation (Hallinger et al., 2014; Liu & Zhao, 2013). In the US, 44 states and the District of Columbia adopted the Common Core State Standards (CCSS) in 2010 (LaVenia et al., 2015) and 46 states have enacted new teacher evaluation policies (Grissom & Youngs, 2015). The CCSS are designed to bring coherence and a common, rigorous focus to instruction and school improvement both within and across districts and states. Central goals of recent teacher evaluation policies have been to increase attention to, agreement around, and accountability for meeting shared expectations for quality teaching (Reinhorn et al., 2017). These policy initiatives have left many school and district leaders grappling with how to simultaneously implement two large-scale policy initiatives. Scholars have called for further research to understand how policies aimed at standards and at teacher evaluation are implemented concurrently in schools and districts (Coburn et al., 2016; Reinhorn et al., 2017; Stosich, 2018).

In this study we aim to deepen understanding of the district-wide coherence and coordination that is needed to implement large-scale policy initiatives within the same period of time. In the process, we draw on research that suggests that social networks—the social structures and relationships or "ties" among individuals and groups—can play a crucial role in enabling administrators to share information, engage in collective sensemaking, and develop shared understandings of policies and their implications for practice (Coburn, 2001; Daly, 2012; Daly & Finnigan, 2011; Stosich, 2016). In this case, we look specifically to relationships, common understandings, and collective expertise as key organizational characteristics that might support implementation of the CCSS and teacher evaluation policies. At the district level, such coherence and common focus is presumed to help ensure that all students and teachers are held to high standards of learning and facilitate coordination among individuals within and across schools and among the different parts of the school system.

Recent research suggests that coordination among administrators and teachers around shared goals supports implementation of the CCSS and teacher evaluation policies (Stosich, 2017; Reinhorn et al., 2017). However, school leaders may be overwhelmed with the number of reforms they are expected to implement, may not believe they are capable of implementing the policies, may not believe the policies will benefit students, and they may experience confusion or distrust in interactions with central office administrators (Daly, Liou, et al., 2014; Fullan & Quinn, 2015; Liou, 2016). These negative views may discourage them from seeking out information from colleagues or engaging in collaborative learning opportunities that could contribute to common understandings of these policies and their implications for practice. Administrators often have different ideas about what quality teaching looks like (City et al., 2009) and may lack specific content knowledge and understanding of standards that is needed for successful implementation (Kaufman & Berglund, 2018). Achieving coherence and coordination in these types of conditions presents a challenge for any policy initiative, let alone two large-scale initiatives, such as the CCSS and teacher evaluation.

Drawing on previous research (e.g., Borgatti et al., 2013; Daly, 2012), we argue that social networks in which many different individuals and groups are connected and exchanging information and materials back and forth (networks with high levels of "density" and "reciprocity"), few individuals or groups are not directly connected with one another (networks with low levels of "fragmentation"), and high levels of coordination or overlap across networks related to different initiatives would provide a strong foundation for the kind of coordination and coherence that is a

goal of the CCSS. Specifically, when administrators talk to the same colleagues about the CCSS, teacher evaluation, and teaching and learning, the connections or overlap among their social networks could encourage coordination among these policies and their approach to instruction. Increasing levels of density, reciprocity, and overlap among administrators' networks would indicate that the work on the CCSS and teacher evaluation was becoming integrated in an overall approach to instruction. Notably, administrators' roles (Supovitz et al., 2016), beliefs about policy (Liou, 2016), opportunities for professional learning (Coburn & Russell, 2008), and the design and coordination of district initiatives may influence whom they go to for information and advice during policy implementation.

We examined administrators' social networks using survey and interview data from district- and school-level administrators from three districts during their first three years implementing the CCSS and a new teacher evaluation policy; thus, this study explores the evolution of administrators' social networks during the early stages of policy implementation. We explored the extent to which these districts might be developing the kinds of social networks that can serve as a foundation for a common focus and coordination of activities around the CCSS and teacher evaluation. As part of this, we examined how administrators' roles, policy beliefs, professional learning opportunities, and the organizational structure of schools and districts influenced administrators' social networks. Specifically, we aimed to answer the following questions:

- How do the social networks among administrators related to the CCSS and teacher evaluation evolve in the early stages of policy adoption?
- To what extent is there evidence of increasing coordination across administrator social networks focused on the CCSS, teacher evaluation, and instruction in general?
- What is the relationship between administrators' understanding, access to resources, and beliefs about the CCSS and teacher evaluation policies and their social ties?
- What is the relationship between district initiatives on the CCSS and teacher evaluation and the evolution of administrator social networks?

Theoretical Framework: Policy Coherence and Social Networks

The widespread adoption of college- and career-ready standards, such as the CCSS, and teacher evaluation policies reflects a central concern of standards-based reform: that a lack of alignment amongst elements of the educational system impedes large-scale improvement efforts (Fuhrman, 1993; Smith & O'Day, 1990). Consistent with these concerns, research suggests that inconsistencies in policies can create a variety of problems including mismatches between supports, expectations, and incentives (Cohen, 1995; O'Day et al., 1995; Porter et al., 2011); the proliferation of conflicting demands that undermine improvement (Bryk et al., 1998; Elmore, 2004); and a lack of focus for instructional programs (Bryk et al., 2009; Newmann et al., 2001). The basic approach that standards-based reforms like the CCSS and teacher evaluation policies take to addressing these problems is relatively straightforward – establish high-quality goals for students' learning and teachers' practice, assess progress against these goals, and impose accountability (Fuhrman, 1993; Mehta, 2015).

Evaluations of standards-based reforms in the 1990's and more recently, however, have shown that implementing common standards and coordinating activities across classrooms and schools is challenging and complex (O'Day et al., 1995; Polikoff, 2012; Spillane, 2004; Stosich, 2017). Further, examining whether adoption of rigorous academic standards leads to improvements in student learning is difficult, and early results on the effects of the CCSS on student achievement are mixed (Loveless, 2016; Xu & Cepa, 2018). Translating ambitious policies into meaningful improvements in practice is a challenge of both *alignment* and *coherence* (Honig & Hatch, 2004).

Alignment focuses on "lining" up structures, demands, and incentives in different aspects of the education system. Coburn and colleagues (2016) argue that policymakers have developed increasingly sophisticated approaches to aligning standards with curriculum, assessments, professional development (PD), and teacher evaluation. For example, many organizations are developing curricula and PD aligned to the standards and used across districts and states (Hodge et al., 2016). Thus, one crucial test of the implementation of the CCSS lies in evaluating the extent of "vertical"—between goals and policies at different levels—and "horizontal"—across individuals and groups at each level—alignment between the standards and the curriculum, assessments, incentives, and learning opportunities for educators and students in different communities (Polikoff, 2015; Porter et al., 2011). By contrast, coherence reflects the sense that individuals and groups make of particular aspects of their experience and the extent to which they perceive those aspects as consistent and understandable.

Thus, while alignment focuses on making sure that the technical aspects of education are in sync, coherence is a state of mind: it grows out of the meaning that individuals attach to their activities (Hatch, 2015). As administrators confront multiple policies, they "craft coherence" or negotiate connections among policy and district goals for teaching and learning (Honig & Hatch, 2004). Thus, a focus on coherence brings attention to the ways in which administrators interpret and bridge to or buffer themselves from external policies based on their beliefs about their potential benefits, consequences, and alignment with district goals. From this perspective, successful implementation of the CCSS and teacher evaluation policies depends on both creating greater alignment in the structures of the educational system and fostering a sense of coherence among those involved in the educational enterprise.

Scholars argue that strong leadership from administrators is essential for crafting coherence between external policy goals and internal school and district goals (Louis & Robinson, 2012; Stosich, 2018). Coordination of activities around shared goals has been identified as a key attribute of effective organizations, both inside and outside of education (Lawler, 1990; Wohlstetter et al., 1994), and in relation to the implementation of the CCSS and teacher evaluation policies specifically (Reinhorn et al., 2017; Stosich, 2017). However, even if the policies, goals, and curricula related to the Common Core and teacher evaluation are intended to be coordinated, educators "on the ground" may still interpret those policies and goals as conflicting and incoherent. "Frontline" workers like principals and teachers may see these policies as inconsistent with their own aims and goals for their students (Coburn & Russell, 2008; Louis et al., 2005).

Several main factors may impede the development of the kind of coherence that the Common Core and teacher evaluation policies seek to achieve. First, administrators' limited knowledge of the CCSS (Kaufman & Berglund, 2018) and the specific frameworks used for teacher evaluation (Halverson et al., 2004) may make it difficult for them to understand how these policies connect to each other and can be used to provide coherent guidance for teachers' instruction. Additionally, the demands of dealing with many initiatives at the same time may contribute to an overall sense of fragmentation (Elmore, 2004; Hatch, 2015).

To support implementation of the CCSS and teacher evaluation policies, states and districts adopting the Common Core have sponsored a variety of activities to spread the word about the Common Core and the "shifts" in instruction that it represents, such as providing professional development materials that encourage these shifts (Hodge & Benko, 2014). Similarly, states and districts have adopted common observation tools to support the implementation of new approaches to evaluation and provided training to achieve inter-rater reliability among administrators, which can help to create common language for discussing teachers' practice (Kraft & Gilmour, 2016). Additionally, one such observation tool, Danielson's (2013) Framework for Teaching, which has been adapted for use in teacher evaluation, was revised to reflect the Common Core shifts. The

Danielson Framework, as it is commonly called, is widely used nationally and was one of several frameworks approved by the state for use in meeting the new teacher evaluation requirements. Nevertheless, exactly how the implementation of the CCSS and teacher evaluation policies might contribute to the sense of coherence central to producing more focused and coordinated instruction for students remains to be seen. Therefore, in this paper, we use social network analysis to explore one mechanism – the development of relationships and communication networks among administrators – that might help to foster shared goals and more coordinated activities focused on instruction across a district (Borgatti et al., 2013; Daly, 2012).

The Role of Social Networks in Developing Coherence

This study draws on an emerging view of school and district capacity that suggests that reaching higher standards of learning for all students depends on building technical, human, and social capital (Bourdieu, 1986; Cohen & Ball, 1999; Coleman, 1988; Corcoran & Goertz, 1995; Daly & Finnigan, 2011; Lin, 2001; Newmann et al., 2000; O'Day et al., 1995; Putnam, 2000; Spillane et al., 2003; Spillane & Thompson, 1997). From this perspective, effective implementation of the CCSS and teacher evaluation policies will depend on access to curriculum materials, instructional frameworks, and other resources that are linked to the standards for students and teachers (technical capital); opportunities for teachers and administrators to develop the skills and knowledge to help students and teachers meet these expectations (human capital); and networks of relationships that enable them to share information and expertise about these policies with their colleagues and foster the development of resources like trust and collective expertise (social capital) (Bryk & Schneider, 2002; Daly & Finnigan, 2011; Louis et al., 1996; Spillane et al., 2012).

Social connections and networks play a particularly important role in fostering social capital and building the capacity for improving instruction because they are the conduits that constrain and enable the flow of resources, knowledge, and beliefs across a school district (Daly, 2012). These social connections also create opportunities for common experiences and collective sense-making (Coburn, 2001; Stosich, 2016) that are central to fostering a shared focus, coordinating work, and developing a sense of coherence. Thus, networks in which many different individuals and groups are connected (networks with high levels of "density" and "reciprocity") have a strong foundation for developing common goals, coordinating activities, and developing the sense of coherence central to the success of standards-based reforms like the CCSS and the new policy on teacher evaluation. However, these connections may reinforce negative beliefs about policy; research on teachers suggests that individuals who collaborate with colleagues who hold negative beliefs about standards-based reforms may be more likely to reject these policies than those who work in isolation (Coburn, 2001; Gallucci, 2003). Still, districts may be able to foster productive information-seeking behaviors among administrators by establishing collaborative opportunities for professional learning about policy (Liou, 2016). This line of research suggests that administrators' professional learning opportunities can shape their beliefs and, ultimately, information seeking behaviors related to policy in ways that can support or constrain implementation.

A social network with many individuals and groups who are not directly connected with one another (a network with a high degree of "fragmentation") suggests that information, materials, and knowledge related to policy will take a long time to travel throughout an organization (Borgatti et al., 2013). In fact, some members of the organization may not share in exchanges of information and materials at all. Correspondingly, coordination may be more difficult. It is important to stress, however, that effective flow of technical and human capital is not just about the number of social ties or the frequency of interactions between individuals within a network. In networks with a high frequency (or density) of interactions, individuals may find it difficult to spread knowledge of best practice (Szulanksi, 1996) or relational ties may reinforce norms that constrain change (Maroulis &

Gomez, 2008). Under these circumstances, developing relationships and networks that connect many individuals and groups across a district may create supportive, though not sufficient, conditions for the development of a shared focus on and a common understanding of the implementation of standards-based initiatives.

Furthermore, several conditions might limit the development of the kinds of social networks across schools and districts that facilitate implementation of the CCSS and the new teacher evaluation policy. First, the number and variety of initiatives in which a district is engaged can make it harder for administrators to focus their attention and coordinate activities (Hatch, 2001). Further, administrators' social networks can be affected by aspects of the formal organizational structure, including roles and job responsibilities, meeting schedules, and office locations (Hatch et al., 2016; Roegman et al., 2018; Small, 2009; Supovitz et al., 2016). For instance, assigning administrators and teachers to different roles (i.e. superintendent, instructional supervisor) affects both who they work with and what they work on together (Coburn & Russell, 2008; Spillane et al., 2012). Additionally, research on teachers suggests that districts' design of professional development can influence the depth and substance of social networks connected to policy (Coburn & Russell, 2008). Further research is needed to understand how districts can organize to better support coordination and coherence among multiple policies.

Additionally, administrators' beliefs about policy can support or constrain the development of their social networks as well as their implementation behaviors. This line of scholarship reinforces the idea that beliefs drive action (Bandura, 1997). Research on teachers suggests that individuals with more positive beliefs about their ability to implement the CCSS, access to resources to support implementation, and the positive impact of the standards are more likely to take action to implement these standards. Those actions include attending relevant PD, modifying instruction, and collaborating with colleagues to align instruction with standards (Liou et al., 2019). Similarly, research suggests that district and school leaders who perceive themselves as more capable instructional leaders may be more likely to be sought out for advice about reform by their colleagues (Daly, Liou, et al., 2014; Liou, 2016). Further, Liou (2016) found that administrators who described themselves as capable of implementing the CCSS tended to both seek and provide advice about the CCSS more frequently than administrators who described themselves as less capable. Thus, positive policy beliefs may encourage administrators to connect with their colleagues in ways that could support knowledge sharing and reform implementation.

In this study, we hypothesized that the development of social networks through which administrators could share information would be an important foundation for the shared focus and coordination critical to the success of the CCSS and the teacher evaluation policy. However, we also anticipated that introduction of the teacher evaluation policy might lead to increased fragmentation in administrators' social networks related to the CCSS. Further, we anticipated that administrators' beliefs about their ability to implement the policies, their access to resources, and the potential impact of these policies on students as well as other district initiatives and the roles and responsibilities that administrators had for policy implementation could influence their social networks related to the CCSS and teacher evaluation.

Methods

In order to carry out this study, we used social network analysis (Borgatti et al., 2013; Hanneman & Riddle, 2005) to document the development of relationships among administrators in three districts over three school years (2010-2013). Specifically, we explored administrators' communication networks by asking whom administrators "talk to" about the CCSS, teacher

evaluation, and issues of teaching and learning in general. This study was part of a larger study of how administrators' engagement in instructional rounds—a coordinated approach to classroom observations—might contribute to the development of social networks focused on instruction (City et al., 2009). When that study began, we also collected data related to the CCSS and teacher evaluation, since these policies were launched around the same time. Given their involvement in instructional rounds, these districts may be more likely to have collaborative connections among administrators than districts not involved in intentional efforts to work collectively to improve instruction.

Policy Context

All three districts are in the same state, which submitted a Race to the Top grant application that included the adoption of CCSS and a performance-based teacher evaluation processes. The state adopted the CCSS in 2010 with full implementation initially scheduled for 2013-14. However, CCSS-based state assessments were not introduced until 2014-15. Implementation of the CCSS began in lower elementary grades in math in 2011, eventually expanding to include all grade levels of language arts and mathematics by 2014. The state provided local educational authorities (LEAs) with some funds to support professional development, which was geared primarily to teachers and content area supervisors in these two subject areas.

In 2010-11, the state legislature also debated and then passed new requirements for teacher and principal evaluation, with piloting in a small number of districts, including the middle-income district in this study, beginning in 2011 and full implementation expected in the 2013-14 school year. Those requirements, like many new evaluation procedures adopted around the country, included the demand for districts to adopt one of several state-approved observation frameworks for teacher evaluation, with many districts adopting the Danielson Framework. School districts were responsible for ensuring that all administrators and teachers understood their adopted frameworks, including providing professional development focused on the framework.

Participating Districts

The three districts discussed in this study were selected originally because their superintendents were a part of a group using instructional rounds to create a common, system-wide focus on instruction (Hatch et al., 2016; Roegman et al., 2015). All of the districts in the superintendents' group were small to midsized exurban or suburban districts. We selected these three districts because they were similar in size and reflect a range of demographics in terms of students' racial background, average performance in terms of students' test scores, and family income. To distinguish these districts from one another, we labeled each of the districts by the median income of their communities. The middle-income district had a median income of about $70,000 (approximately the median for the state) and almost equal percentages of White, Black, Hispanic, and Asian students, with about 20% of students receiving free and reduced-price lunch. The higher-income district had a median income of about $90,000; 50% of students were White, 40% Black, 5% Hispanic, and 5% Asian; and about 5% received free and reduced-price lunch. The highest-income district had a median income over $100,000; 50% of the students were Asian, 40% White, 5% Black, and 5% Hispanic; and very few of the students received free and reduced-price lunch. These districts reflected the mid-to-high range of districts in the state in terms of income as well as student performance. Thus, these districts cannot be considered to be representative of all districts in the state.

Further, the fact that all of these districts are relatively small, exurban or suburban districts serves as both a strength and limitation of this study. This study extends research on the role of administrators' social networks during policy implementation, which has generally focused on large,

urban districts (e.g., Liou, 2016; Spillane et al., 2018). District size can act as an important factor during network development. The relatively small size of these districts meant that they were able to hold regular meetings with all administrators, which would be much more difficult in a larger district.

Data Collection

Surveys

We conducted social network surveys during three school years (2010-2013). Consistent with research that shows the importance of connections amongst those in formal leadership positions (Hightower et al., 2002; Honig, 2006), this survey focused on relationships among each district's administrators. The survey used a bounded saturated approach (Lin, 1999) and included all the members of each district's central office leadership team (superintendent, assistant superintendents, directors, supervisors) as well as the principals and assistant principals in each school. Administrators were asked to complete the survey online (using Survey Monkey) during the summer after each school year. Over all three years, all district survey response rates were over 80%.

The survey asked administrators to identify with whom and how often they talked about the CCSS, teacher evaluation, and issues of teaching and learning. For example, participants were given a list of all district leaders and asked, "How often did you talk with each central office administrator about the Common Core Standards?" These connections are important since information sharing can help to develop the knowledge and common understandings necessary for coordinated improvement efforts (Daly & Finnigan, 2010; Spillane et al., 2018). Consistent with other studies of district administrators (e.g. Daly & Finnigan, 2010, 2011), network survey questions asked respondents to describe their frequency of interaction during the academic year on a 4-point scale (every two months or so, one or two times a month, once a week, or several times a week). We dichotomized the data to include only frequent communication ties between actors because actors are more likely to accurately identify ongoing patterns than occasional interactions (Carley & Krackhardt, 1999; Daly & Finnigan, 2010). Specifically, a tie was considered "frequent" if survey participants reported that communication took place once a month or more (greater or equal to 2 on the rating scale; Daly, 2012).

Additionally, in year three the survey asked administrators to identify their level of agreement with statements about their understanding, staff support, resources, and beliefs about the potential impact of the CCSS and teacher evaluation. As explained above, this analysis grew out of a larger study of administrators' participation in instructional rounds, and the surveys focused primarily on administrators' perceptions of rounds and related initiatives initially. As the CCSS and teacher evaluation took on greater importance in these districts, we were able to take advantage of the opportunity to include questions about beliefs related to these two policies. We developed two scales related to administrators' beliefs about their understanding, access to resources, and benefits of the CCSS and teacher evaluation based on research on educator beliefs about policy implementation (e.g. Bandura, 1997; Liou et al., 2016; Spillane, 2004). For example, to measure beliefs about the benefits of the teacher evaluation policy, we asked the extent to which participants agreed with the following statement: "The teacher evaluation process will have a positive impact on students in my district."

We conducted principal components analysis (PCA) with varimax rotation to confirm the number of components and the level of internal consistency. These analyses revealed information about the construct validity and reliability of the scales. We identified the number of dimensions of information present and retained only the items that were the best measures of each dimension of information. Specifically, we used Kaiser's criterion (Kaiser, 1960) to identify the number of components with eigenvalues of 1.0 or greater to retain for further investigation. Additionally, we used scree tests to plot the eigenvalues of each component in descending order of magnitude and

visually determine the number of factors that appeared to provide meaningful information about response variance (Kline, 2010). We engaged in an iterative process to determine the items that best measured each of the principal components, considering both the factor loadings and conceptual connections between items to determine the items that appeared to best measure each principal component. Then we removed items that seemed to be the strongest measures of one component and re-examined the factor loadings on the other principal components. After identifying the items that seemed to best measure each component, we computed Cronbach's alpha to analyze the estimated internal-consistency reliability of each of these scales.

The Teacher Evaluation Beliefs scale had a high internal consistency (5 items, α = .88) and PCA with varimax rotation resulted in a single-factor solution that explained 68.9% of the variance (see Table 1). By contrast, the items related to the Common Core seemed to represent two distinct dimensions of information, which we named Common Core Resources Beliefs and Common Core Impact Beliefs. Similarly, Liou and colleagues (2016) found that measures of CCSS impact and resources were distinct constructs. The estimated internal-consistency reliability was relatively high for Common Core Resources Beliefs (2 items, α = .82). PCA with varimax rotation yielded a single-factor solution that explained 84.8% of the variance. The estimated internal consistency approached the acceptable level for Common Core Impact Beliefs (2 items, α = .69) and PCA with varimax rotation resulted in a single-factor solution that explained 77% of the variance. Thus, we used the three scales—Teacher Evaluation Beliefs, Common Core Resource Beliefs, and Common Core Impact Beliefs—to examine the relationship between administrators' policy beliefs and communication networks. Notably, administrators' policy beliefs were only measured once (Year 3); thus, we are unable to examine the evolution of these beliefs.

Table 1

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

Survey Items	Factor Loadings
Common Core resources beliefs (α = 0.82)	
1. I have access to staff or consultants for mentoring, advice, and ongoing support around the Common Core State Standards (CCSS)	0.92
2. I have the resources and materials I need to implement the CCSS	0.92
Common Core impact beliefs (α = 0.69)	
1. The CCSS will have a positive impact on students in my district	0.88
2. The CCSS will produce more equitable student outcomes in my district	0.88
Teacher evaluation beliefs (α = 0.88)	
1. I have a clear understanding of the teacher evaluation process being developed in my district	0.83
2. I have access to staff or consultants for mentoring, advice, and ongoing support around teacher evaluation	0.80
3. I have the resources and materials I need to implement the teacher evaluation process	0.84
4. The teacher evaluation process will have a positive impact on students in my district	0.85
5. The teacher evaluation process will produce more equitable student outcomes in my district	0.84

Note: n=102

Interviews and Observations

Documentation included annual interviews with administrators in each district, participant observations in monthly meetings and school visits the group carried out, and documents related to the improvement initiatives underway in each district. Data collection included semi-structured interviews with three to five administrators in each district each year and bi-annual interviews with the superintendents. Interviewees were selected based on their roles as leaders in each districts' efforts to improve instruction and address issues of equity (another focus of the superintendents' group). These interviews lasted 45-60 minutes and included at least one principal, one assistant superintendent, and one other member of central office (such as a curriculum supervisor or data specialist). Interviews focused on the structure and evolution of each district's instructional rounds work, key initiatives related to instruction and equity (including work on the CCSS and teacher evaluation), their roles in those initiatives, and their interactions in formal and informal opportunities for meeting and talking with other administrators about these initiatives. For example, we asked administrators about their involvement with the Common Core, formal meetings related to the standards, and their connection to other district initiatives. Additionally, we made two site visits to each district. Thus, we have been able to triangulate data across multiple sources (e.g., superintendent, principal) and collection methods (e.g., interview, observation; Maxwell, 2013).

Data Analysis

Survey Measures

We used UCINET to calculate overall network measures, allowing us to determine how the Common Core networks evolved when compared to the teacher evaluation networks and the networks focused more generally on instruction—the teaching and learning networks—over the three years of the study. These measures included network density – the ratio of existing ties to possible ties; network reciprocity – the percent of all present dyads with ties that are reciprocated (in which both respondents report talking to one another); network fragmentation – the proportion of pairs of nodes that are not connected among all the possible pairs of nodes that could be connected; external-internal (E-I) index – comparing the number of ties that happen within groups to ties that happen between groups in a network, which can range from -1 (all ties are internally within groups) to 1 (all ties are externally between groups; Burk et al., 2007; Hanneman & Riddle, 2005; Snijders et al., 2010). Networks with frequent interactions and high density among actors have been found to support the transfer of complex knowledge and innovative solutions (Borgatti et al., 2013).

Additionally, we used Gould and Fernandez's (1989) notions of different types of brokerage roles to identify which administrators were in a position to broker between different administrator groups (Hanneman & Riddle, 2005). Specifically, our definition of administrators who served as "brokers" between administrators in different roles included what Gould and Fernandez describe as liaisons—where each node (source→broker→destination) belongs to a different role. By creating connections across administrators in different roles, these brokers can help to provide access to information that may not be readily available to an actor in their given role. Research in education suggests that networks with few brokers may weaken overall coherence around reform (Daly, Finnigan, et al., 2014).

We then used the bootstrap paired sample t test in UCINET to determine whether there were statistically significant changes in the density of the district networks over the three years. We also used UCINET to conduct a series of quadratic assignment procedure (QAP) correlations to determine the extent to which the two policy networks were correlated to each other and the teaching and learning network. QAP correlations capture the extent to which those who are likely to

interact in one network are also likely to interact in the other (Hanneman & Riddle, 2005) and can be seen as an indicator of how similar different networks are to one another. Next we produced descriptive statistics to understand differences related to different roles, districts, and policies. We conducted paired t-tests and analyses of variance with post hoc tests to examine differences within and between groups of individuals in different positions, as well as differences across groups. All statistical analyses were conducted with SPSS 25.

We then examined the relationship between administrators' policy beliefs and their information seeking behaviors, as measured by indegree and outdegree ties. Consistent with recent research on the importance of information exchange for coordination during policy implementation (Daly, Liou, et al., 2014; Liou, 2016; Spillane et al., 2018), we treat outdegree ties – or the number of outgoing ties that an actor sends to other actors – as measures of seeking out information from others and treat indegree ties – the number of incoming ties other actors send to a particular actor – as measures of being sought out for information. In these analyses, the dependent variables are count variables (e.g., outgoing ties — the number of people you talked to about the CCSS); thus, we used negative binomial regression, which is a generalization of a Poisson model that accounts for overdispersion (Barron, 1992; Sasovova et al., 2010). All models included gender, role, district, and years of experience as controls (Liou, 2016; Supovitz et al., 2016).

Interview and Observation Data

Interview and observational data was analyzed to understand the relationship between district initiatives related to the two policies and administrators' social networks, our fourth research question. To analyze the data from interviews, we first selected sections in which administrators talked about the CCSS or teacher evaluation. We then used the concepts from our research questions (e.g., understanding, resources, coordination) as frames for analysis (Marshall & Rossman, 1995) to code and organize the data. For example, we coded data in which participants discussed PD related to each initiative as instances of "support" and then identified patterns in how PD was organized and how this related to administrators' social networks. Using a concurrent mixed methods design (Creswell et al., 2003), both quantitative and qualitative data provide partial perspectives on our understandings of policy implementation in each district.

Results

In this section, we present our findings in terms of each of the four research questions. First, we describe the evolution of the three networks related to the Common Core, teacher evaluation, and instruction generally during the early stages of policy implementation. Then we examine how these networks were correlated during the three years of the study as evidence of possible coordination. We then explore how administrators' beliefs about each of these policies related to their district, role, and their communication networks. Finally, we describe how the unique initiatives pursued in each of the three districts may have influenced administrators' beliefs and social networks related to each policy.

Evolution Within Common Core, Teacher Evaluation, and Instructional Networks

We found some basis for district-wide connections and support for coordination and coherence in all three districts. However, there were no significant changes in the density of any of the networks in the middle- or higher-income districts over the three years. Comparing network density using the paired sample t-test in UCINET, we found that the density of the Common Core network in the highest-income district decreased significantly from Year 1 to Year 3 (average bootstrap difference = 0.03, $p<.05$). Notably, this procedure was used to compare the same relation

on the same set of actors and, thus, excluded the 14 actors who were present in one but not both of the years. Thus, the observed decrease in network density appears small from Year 1 and Year 2 (0.2), but the actors who remained stable across these two years experienced a statistically significant decrease in the portion of potential connections that were actual connections. In addition, over the three years the three networks in the highest-income district became less correlated (see Table 3). This suggests that there was no evidence of increased coordination among administrators working on one or more of these policies and some evidence of decreased coordination among administrators in the highest-income district, particularly in their work related to the CCSS.

Nevertheless, almost every administrator in each of the three districts had access to information related to the CCSS and teacher evaluation at least monthly across all three years of the study, as represented by their social networks. Further, we found that the E-I index was positive across all networks in all years, which suggested a tendency towards heterophily in these networks. In other words, administrators reported having relatively more communication ties with administrators in different roles (e.g., superintendent, principal) than with administrators in their same role, which could support coordination throughout the district.

However, our results also indicated that the Common Core networks had lower levels of density and reciprocity and higher levels of fragmentation than either the teacher evaluation networks or the networks focused on teaching and learning in general, with one exception (see Table 2). Over the three years, administrators in the three districts reported talking to about one-third or more of the administrators in their district once a month or more about teaching and learning. By contrast, they reported talking to about 20% of administrators in their district this often about teacher evaluation. In the higher- and highest-income districts administrators reported talking to only about 10% of administrators in their district once a month or more about the Common Core. In fact, the Common Core network remained the least developed of the higher-income district's three instructional networks and saw a slight increase in fragmentation over the three years (see Table 3). The only exception was that the middle-income district's Common Core network was slightly denser and less fragmented than the teacher evaluation network in year 2. As described in greater detail below, this was the same year that the teacher evaluation pilot began in this district.

In the middle- and higher-income district, the Common Core networks also had the highest number of isolates—administrators who did not report interacting with any other administrators. Further, there were fewer administrators who served as brokers who connected administrators in different roles in the Common Core networks than in the teacher evaluation networks across all three years in the three districts. Thus, we found that the networks focused on teacher evaluation were more likely to have the characteristics that are conducive to sharing complex information and encouraging coherence than the Common Core networks (Borgatti et al., 2013).

Table 2

CCSS, Teacher Evaluation, and Teaching and Learning Network Measures Across Three Years in Three Districts (ties 1-2 Times a Month or More Frequent)

	CCSS Network			Teacher Evaluation Network			Teaching and Learning Network		
Middle-income District									
	Year 1 (*n*=31)	Year 2 (*n*=31)	Year 3 (*n*=32)	Year 1 (*n*=31)	Year 2 (*n*=31)	Year 3 (*n*=32)	Year 1 (*n*=31)	Year 2 (*n*=31)	Year 3 (*n*=32)
Density	0.13	0.19	0.16	0.20	0.18	0.20	0.38	0.41	0.33
Reciprocity	0.14	0.30	0.16	0.29	0.31	0.30	0.46	0.51	0.44
Fragmentation	0.62	0.23	0.54	0.28	0.29	0.31	0.19	0.16	0.16
Isolates	0	0	2	1	0	0	0	0	0
E-I (Role)	0.78	0.67	0.62	0.66	0.68	0.73	0.73	0.74	0.63
Liaison (Role)	12	19	16	21	21	18	23	27	25
Higher-income District									
	Year 1 (*n*=36)	Year 2 (*n*=39)	Year 3 (*n*=42)	Year 1 (*n*=36)	Year 2 (*n*=39)	Year 3 (*n*=42)	Year 1 (*n*=36)	Year 2 (*n*=39)	Year 3 (*n*=42)
Density	0.07	0.11	0.09	0.20	0.24	0.28	0.40	0.35	0.43
Reciprocity	0.21	0.10	0.17	0.23	0.25	0.32	0.47	0.38	0.51
Fragmentation	0.55	0.63	0.56	0.22	0.28	0.17	0.22	0.18	0.14
Isolates	2	0	2	0	0	0	0	0	0
E-I (Role)	0.64	0.55	0.37	0.64	0.66	0.56	0.63	0.67	0.65
Liaison (Role)	11	12	16	24	23	34	28	31	36
Highest-income District									
	Year 1 (*n*=44)	Year 2 (*n*=45)	Year 3 (*n*=46)	Year 1 (*n*=44)	Year 2 (*n*=45)	Year 3 (*n*=46)	Year 1 (*n*=44)	Year 2 (*n*=45)	Year 3 (*n*=46)
Density	0.11	0.11	0.09	0.19	0.20	0.21	0.32	0.38	0.34
Reciprocity	0.15	0.11	0.15	0.36	0.22	0.24	0.38	0.42	0.47
Fragmentation	0.52	0.57	0.49	0.22	0.33	0.26	0.14	0.22	0.20
Isolates	0	0	1	1	0	0	0	0	0
E-I (Role)	0.66	0.73	0.56	0.74	0.68	0.73	0.74	0.75	0.73
Liaison (Role)	14	19	20	26	25	30	25	35	37

Coordination Across Common Core, Teacher Evaluation, and Instructional Networks

Both policy networks—Common Core and teacher evaluation—had lower levels of density and reciprocity than the networks focused on teaching and learning in general. Importantly, the QAP correlation results also indicated that all three of the networks were only weakly or moderately correlated to one another (r = .32 to r = .73) across all three years (see Table 3). Since some correlation among different networks of the same group is expected, this suggested that these are distinct rather than coordinated networks. In all three districts, the low to moderate correlations among the two policy networks suggested that administrators were talking about these initiatives in somewhat isolation of each other. Specifically, administrators who were talking to each other about the Common Core were often talking to different people about teacher evaluation. Further, the Common Core networks tended to be less correlated to the general instruction networks than the teacher evaluation networks over the three years in all three districts. In the highest-income district, the three networks became less correlated with each other over the three years (see Table 3).

Notably, the middle-income district's teacher evaluation and Common Core networks were most similar during Year 2, the year they began the teacher evaluation pilot ($r = 0.73$, $p < .01$). Additionally, the higher-income district's networks focused on teacher evaluation and teaching and learning became more similar over the three years. This suggested that it was easier to share information and knowledge about instruction and teacher evaluation across schools and roles in each district than it was to share information and knowledge about instruction and the Common Core. It also showed a limited foundation for coordination and coherence in the work on teacher evaluation and the Common Core.

Table 3

QAP Correlations in Three Districts

Year	Middle-income	Higher-income	Highest-income
QAP Correlations between CCSS and Teacher Evaluation			
Year 1	0.50	0.43	0.64
Year 2	0.73	0.54	0.63
Year 3	0.67	0.42	0.49
QAP Correlations between CCSS and Teaching & Learning			
Year 1	0.49	0.32	0.48
Year 2	0.55	0.44	0.42
Year 3	0.54	0.34	0.39
QAP Correlations between Teacher Evaluation and Teaching & Learning			
Year 1	0.62	0.46	0.62
Year 2	0.55	0.58	0.56
Year 3	0.58	0.59	0.60

Administrators' Beliefs about the Common Core and Teacher Evaluation and Their Social Ties

On average, administrators in all three districts viewed the Common Core and teacher evaluation relatively positively, including their access to support and resources for implementation and their beliefs about whether the policies would lead to improved outcomes for students (see Table 4). However, paired t-tests showed that administrators had significantly more positive beliefs about teacher evaluation (M = 3.20, SD = 0.55) than they did about both Common Core resources (M = 2.83, SD = 0.62) and Common Core impact (M = 3.04, SD = 0.47); respectively $t(101) = 5.21$, $p < .0001$ and $t(101) = 2.54$, $p = .013$. Additionally, administrators had significantly more positive beliefs about Common Core impact than Common Core resources; $t(101) = 3.08$, $p = .003$.

Table 4

Descriptive Statistics for Common Core Resources Beliefs, Common Core Impact Beliefs, and Teacher Evaluation Beliefs Among Administrators in Three Districts in Year 3

	Sample, *n*	Common Core Resources Beliefs	Common Core Impact Beliefs	Teacher Evaluation Beliefs
All Administrators	102	2.83 (0.62)	3.04 (0.47)	3.20 (0.55)
Middle-income	27	2.78 (0.57)	3.06 (0.51)	2.88 (0.65)
Higher-income	36	2.69 (0.67)	3.01 (0.49)	3.37 (0.47)
Highest-income	39	3.03 (0.54)	3.04 (0.46)	3.27 (0.45)

Note: Values presented as mean (SD) unless noted otherwise.

An analysis of variance that compared policy beliefs across districts suggested that there were significant differences in administrators' beliefs about teacher evaluation policy but no significant differences in their views of the resources related to or potential impact of the Common Core. Post hoc tests indicated that administrators in the higher-income and highest-income districts had significantly more positive beliefs about teacher evaluation policy than administrators in the middle-income district (mean difference respectively = 0.49, 0.38; SE = 0.13, 0.13; p = .001, .011), but administrators' beliefs about teacher evaluation policy in the higher-income and highest-income districts were not significantly different than each other (mean difference = 0.11, SE = 0.12, p = .657). As described below, the middle-income district was the only district participating in the state's teacher evaluation pilot.

We then analyzed the relationship between administrators' policy beliefs and their communication networks. The full data set in year three consisted of 120 administrators. From these, we removed 18 individuals who had not completed the survey in year three and, thus, for whom we did not have information about their policy views. The remaining 102 administrators included school- and district-level administrators from all three districts.

We hypothesized that administrators with more positive views about the Common Core would communicate with more people about the policy, as measured by outgoing ties. The results of negative binomial regression presented in Table 5 showed support for this hypothesis. We found that administrators' views about their access to resources related to the Common Core ($p < .001$) and the positive impact of the policy on student learning ($p < .10$) were positively related to administrators' outgoing communication ties related to the policy; however, the relationship to Common Core Impact Beliefs was only marginally significant. Four separate models were included for analyzing the relationship between Common Core communication networks and beliefs. These models included: model 1 with control variables only, model 2 including Common Core Resource Beliefs, model 3 including Common Core Impact Beliefs, and model 4 including both Common Core Resources Beliefs and Common Core Impact Beliefs, which represented the full model (see Table 5). We can see that adding Common Core Resources Beliefs (model 2) or Common Core Impact Beliefs (model 3) to the regression significantly improved overall model fit relative to the control only model 1, as indicated by the results of the likelihood ratio test (respectively $\chi = 44.17$, $p < .001$; $\chi = 29.54$, $p < .01$). Further, we can see that adding both Common Core Resources Beliefs and Common Core Impact Beliefs to the regression improved the overall model fit relative to models which include only one of the measures of administrators' beliefs related to the policy ($\chi = 47.90$, $p < .001$).

Table 5

Results of Negative Binomial Regression Predicting Outgoing Common Core Ties (n=102)

Variable	Model 1	Model 2	Model 3	Model 4
Gender=0	0.20	-0.09	0.26	0.01
District=Middle-income	0.19	0.97**	0.29	0.94**
District=Higher-income	-0.12	0.23	-0.18	0.18
Role=1	3.35**	2.77*	3.07*	2.66*
Role=2	2.75*	2.67*	2.59*	2.62*
Role=3	2.51*	2.61*	2.52*	2.60*
Role=4	3.24*	3.23*	3.05*	3.11*
Role=6	3.09**	3.73**	3.17**	3.74**
Role=7	2.50*	2.81*	2.43*	2.72*
Role=8	2.61*	2.22+	2.21+	2.05+

Table 5 cont.

Results of Negative Binomial Regression Predicting Outgoing Common Core Ties (n=102)

Variable	Model 1	Model 2	Model 3	Model 4
Years Education	0.02	0.02+	0.01	0.02
Common Core Resource Beliefs		1.0***		0.93***
Common Core Impact Beliefs			0.65**	0.44+
Pearson Chi Square	143.72	107.09	134.16	108.19
Log Likelihood	-259.75	-246.23	-253.54	-244.36
Likelihood ratio test	20.70*	44.17***	29.54**	47.90***

+$p < .1$, *$p < .05$, **$p < .01$, ***$p < .001$

Entries represent parameter estimates. The intercept and dispersion parameters were included in the negative binomial regression models but are not reported here.

Similarly, we hypothesized that administrators with more positive beliefs about teacher evaluation would communicate with more people about the policy, than administrators with negative views about the policy. Controlling for gender, role, district, and years of experience in education, we found that administrators' Teacher Evaluation Beliefs ($p < .05$) were a significant positive predictor of their outgoing communication ties related to the policy (see Table 6). Two separate models were included for analyzing the relationship between teacher evaluation communication networks and beliefs. These models included model 1 with control variables only and the full model, model 2, which included Teacher Evaluation Beliefs. We can see that adding Teacher Evaluation Beliefs to the regression improved overall model fit relative to the control only model ($\chi = 30.64$, $p < .01$). This showed that beliefs were important for outgoing ties in both the case of teacher evaluation and the Common Core; thus, administrators' policy beliefs were positively associated with network characteristics supportive of coordination and coherence.

Table 6

Results of Negative Binomial Regression Predicting Outgoing Teacher Evaluation Ties (n=102)

Variable	Model 1	Model 2
Gender=0	0.45+	0.38+
District=Middle-income	-0.41	-0.19
District=Higher-income	0.10	0.05
Role=1	1.35+	0.92
Role=2	0.74	0.61
Role=3	0.21	0.08
Role=4	0.34	0.39
Role=6	0.53	0.54
Role=7	-0.18	-0.37
Role=8	0.42	0.26
Years Education	-0.01	-0.01
Teacher Evaluation Beliefs		0.47*
Pearson Chi Square	54.50	51.94
Log Likelihood	-328.92	-325.25
Likelihood ratio test	28.20**	30.64**

+$p < .1$, *$p < .05$, **$p < .01$, ***$p < .001$ Entries represent parameter estimates, standard errors are in parentheses. The intercept and dispersion parameters were included in the negative binomial regression models but are not reported here.

By contrast, we found that administrators' policy beliefs—including Common Core Resource Beliefs, Common Core Impact Beliefs, and Teacher Evaluation Beliefs—were not predictive of their being sought out for communication about these instructional policies, as measured by incoming ties. In other words, administrators with more positive beliefs about a policy were no more likely to be sought out for information about the policy than administrators with more negative beliefs about the policy. While these patterns were similar across each district, below, we explore possible connections between district initiatives and administrators' social networks.

District Initiatives on the Common Core and Teacher Evaluation and the Evolution of Administrators' Social Networks

Interviews and site visits to the three districts suggest that differences in the Common Core and teacher evaluation networks may be explained by the degree to which each policy was the focus of district initiatives, the design and intensity of professional development related to each policy, and the degree to which they influenced administrators' responsibilities. These findings extend research on the essential role of administrators in communicating a vision for teaching and learning, including articulating how district and school goals connect to external policies, and creating opportunities for professional learning that can encourage coordination among policies and clarify each policy's implications for practice (Honig & Hatch, 2004; Stosich, 2017).

District Focus

Across all three districts, administrators described limited attention or support related to the Common Core during the time of the study. The superintendents in both the middle- and higher-income districts described their focus on CCSS implementation as beginning after the survey in 2013; whereas, the superintendent of the highest-income district described beginning to focus attention on CCSS implementation during the 2012-2013 school year. By contrast, teacher evaluation was a greater focus for professional learning and policy implementation in all three districts. Correspondingly, as described above, teacher evaluation was viewed more positively than Common Core resources or impact and the teacher evaluation communication networks were as dense or denser than the Common Core networks in all three districts across all three years.

Notably, administrators in all three districts described their focus in ways that appeared connected to the goals of the CCSS in preparing all students for success in college and career. In fact, the superintendent of the middle-income district described focusing on career and college-readiness for all students. Similarly, the superintendent of the higher-income district made ensuring that all students in the district had "a pathway to success in college" a central focus of the district's work; this effort grew out of long-standing concerns about inequities in the district in access to higher education among African-American and White students. The focus of the highest-income district aligned most closely with the Common Core. The superintendent and assistant superintendent emphasized the development of a common, consistent curriculum and assessments focused on 21st Century Skills across the district, but this focus on CCSS implementation began during the final year of the study (2012-2013). The assistant superintendent explained the work at the high school level:

> In the redesign of the curriculum that happened this past summer [of 2012], all of the curricula are aligned to the Common Core, and the skills that we're looking for are now similar. It's just the content off of which students will be developing those skills may be different. You may be reading about monsters in literature, but the reading skills that you need to demonstrate and the writing skills are now aligned

> similarly across all of them. So we've been making that shift in transition to a more consistent [approach].

Additionally, the superintendent in the highest-income district frequently noted the extent to which instruction she observed was "Common Core-aligned" and saw the district's plan to use the Danielson Framework in their approach to teacher evaluation as reinforcing her interest in developing a common district-wide approach to instruction.

Despite these apparent connections between district focus areas and the CCSS, administrators in all three districts described limited attention to standards and their implementation during the time of the study. An instructional supervisor in the middle-income district described only "a little bit of work" taking place related to the CCSS, which she viewed as concerning given the rigorous expectations of the new standards in comparison to relatively lower level instruction she saw in schools. The superintendent of the middle-income district explained,

> People didn't know it [the Common Core]. …I was shocked as much as we sent out information or had workshops or meetings with principals who were supposed to go back to their faculties, it wasn't happening. So [in the summer of 2013] we made a concerted effort to define what the Common Core means for [our district].

Similarly, the superintendent of the higher-income district remarked in the summer of 2013: "I don't know how deep into [Common Core] we really are, you know?... I think for [our district] it was more about the 21st century competencies."

Additionally, the connection between the CCSS and teacher evaluation appeared to receive limited attention in the three districts. Notably, the middle-income district began the pilot project to try out the new state-required approach to teacher evaluation beginning in 2011-12 (year 2), two years before full implementation was required. Further, the superintendent reported taking a particularly strong role in leading district-wide discussions during year 2 related to efforts to reduce the achievement gap, which could help to explain higher levels of coordination among the Common Core and teacher evaluation networks (see Table 3). By contrast, he reported a number of "distractions" from district initiatives during year 3, including staff turnover. Analyzing these interviews together with social network data suggests that close coordination among administrators regarding the connections between policy and teaching and learning is unlikely to occur without explicit attention as part of the district focus and opportunities for bringing administrators together to understand this focus and how it influences their practice.

Professional Development

According to administrators, teacher evaluation was a greater focus for professional development for administrators than the Common Core in all three districts. The middle-income district participated in the teacher evaluation pilot, which included support for training all administrators in using the Danielson Framework for observation with the goal of assigning similar ratings. Additionally, the higher and highest-income district engaged administrators in training related to using the Danielson Framework for their evaluation observations. As described above, post hoc tests revealed that administrators in the higher and highest-income districts had significantly more positive beliefs about teacher evaluation than administrators in the middle-income district. One explanation is that the administrators in the higher and highest-income districts participated in more extensive and collaborative forms of professional development related to the teacher evaluation framework than administrators in the middle-income district.

Administrators in the higher and highest-income districts described professional learning related to teacher evaluation as including discussions during administrator meetings, collaborative

learning using online training modules, conducting joint observations, and critiquing each other's teacher evaluation write ups. Further, administrators in the higher-income district described the training for using the Danielson Framework in observations as collaborative in nature and used words like "extensive," "huge," and "enormous" to describe the amount of training they had received. For example, a central office administrator described engaging in a collective learning process supported by an external consultant in which administrators conducted a joint observation using the Danielson Framework and then discussed and calibrated their scores. These collective professional learning opportunities for administrators regarding teacher evaluation may have positively contributed to the development of social networks conducive to sharing complex information related to the policy by both fostering positive beliefs about their understanding and ability to implement the policy and coordinating the work of administrators in leading reform (Liou, 2016).

Administrator Responsibilities

Administrators described teacher evaluation as having a greater influence on their professional responsibilities than the CCSS. Specifically, interviews suggest that administrators viewed carrying out the teacher evaluation policy as primarily the responsibility of administrators; whereas, they viewed implementation of the CCSS as primarily the responsibility of teachers, with support from school leaders and instructional supervisors. For example, administrators in the highest-income district described implementing the Common Core as primarily a matter of teachers using the revised curriculum, which they viewed as aligned with these new standards.

This view of the two policies was reinforced by the difference in professional development for administrators and teachers. As the assistant superintendent in the higher-income district explained, the professional development around the Common Core was primarily focused on teachers, with attention to supporting instructional supervisors in leading work with teachers in their particular content areas as well. Further, the CCSS varies by grade-level and content area; whereas, the Danielson Framework they used for the teacher evaluation observations was used across grade-levels and content areas. Under these circumstances, professional development related to the Common Core often involved individuals attending out of district meetings on their own or in small groups rather than larger meetings engaging administrators across roles and levels. Accordingly, one administrator in the higher-income district explained that the principals and instructional supervisors were "trying to coordinate" their efforts around teacher evaluation; whereas, work on the Common Core varied by discipline and grade-level. In fact, there were approximately half as many administrators who served as liaisons, connecting administrators in different roles, in the Common Core networks than in the teacher evaluation networks in the district.

According to administrators, the new teacher evaluation policy represented a major shift in their responsibilities, which led to immediate changes to their practice. For example, one instructional supervisor in the highest-income described teacher evaluation as taking up the "majority" of his time. In essence, teacher evaluation received greater attention from administrators than the Common Core since implementing the teacher evaluation policy required completing a formal and documented administrative process that brought administrators together across roles, whereas CCSS implementation was viewed primarily as a shift in teachers' responsibilities, with work carried out by grade-level and subject.

Discussion and Implications

In line with the logic of standards-based reforms (e.g., Smith & O'Day, 1990), the Common Core is intended to help create a common focus for instruction across schools and districts; similarly, the reforms to teacher evaluation are intended to encourage common frameworks for evaluating and supporting instructional quality. These findings show that some, but not all, administrators in each district were talking about the Common Core and teacher evaluation, but growth in the extent of those connections was limited over the three years leading up to full policy implementation. Such limited growth in administrators' social networks related to the CCSS and teacher evaluation is particularly problematic as it suggests that the flow of knowledge, resources, and beliefs related to these policies across these school districts remained relatively restricted (Daly, 2012).

Given the importance of coordination around shared goals and across policies for organizational effectiveness (e.g., Reinhorn et al., 2017), the extent to which discussions of teacher evaluation in these districts seemed to take precedence over discussions of the Common Core could also be problematic. Notably, administrators in each of the three districts in this study were more likely to be talking together about teacher evaluation than the CCSS. In addition, far more administrators in the teacher evaluation networks acted as brokers, connecting administrators across roles, than in the Common Core networks, which could further support information flow among administrators in one network but not the other (Daly, Finnigan, et al., 2014). The correlations between the teacher evaluation networks and the general instruction networks were also higher in each district than the correlations between the Common Core and general instruction networks, suggesting that the conversations around teacher evaluation and instruction may have been converging. Under these circumstances, there is little evidence to suggest that the impending implementation of the Common Core was driving a common instructional focus in these districts or fostering a sense of coherence across schools and roles. Indeed, recent research from one of the authors suggests that introducing teacher evaluation policies may detract from rather than reinforce attention to the CCSS (Stosich, 2018).

Although the lack of convergence and coherence in these social networks makes creating a common focus difficult, there was some evidence to suggest developments that might support more effective implementation in the future. Overall, administrators in all three districts viewed the Common Core and the teacher evaluation policy relatively positively, including their capability to implement these reforms. Administrators, particularly principals, play an essential role in communicating the goals of policy and creating supportive conditions for teacher change (Coburn, 2005; Stosich, 2017). Further, administrators who view themselves as more capable of implementing these policies may be more likely to seek out advice than those who view themselves as less capable (Spillane et al., 2018) and, ultimately, these information-seeking behaviors may support greater coherence among administrators (Daly, Liou, et al., 2014; Liou, 2016). This study extends those findings by showing that those administrators who had more positive views of the Common Core and teacher evaluation were more likely to engage in the productive information-seeking behaviors that could contribute to the development of stronger social networks. Specifically, we found that administrators who viewed themselves as having greater access to resources to support Common Core implementation, had more positive beliefs about the impact of the Common Core on students, or had more positive views of their understanding, access to resources, and the impact of teacher evaluation were more likely to talk to a greater number of their fellow administrators about each of these respective policies. Further, these findings suggest that districts might be able to support the development of stronger social ties and foster information sharing about policy implementation and instructional change by supporting the development of administrators' beliefs in their capability to put these policies into practice.

The interviews with administrators suggest another step that districts may be able to take to foster coherence. Those interviews suggested that teacher evaluation networks may have been more developed than the Common Core networks because the three districts had made teacher evaluation a focus and provided professional development for administrators related to the policy. By contrast, superintendents in two of the three districts described their focus on Common Core implementation as beginning after the conclusion of the study. These findings are consistent with our results from a similar analysis of a large urban district in the same state (Roegman et al., 2018) and indicate that organizing routines, such as creating opportunities for shared observation of instructional practice, can encourage coordination across roles (Hatch et al., 2016). Given these findings, it is possible that Common Core networks might show more development as standards implementation really takes hold and districts focus explicitly on bringing all administrators together to focus on Common Core implementation.

Nonetheless, several aspects of Common Core implementation and the conventional organizational structure of these districts might still have to be overcome in order to develop a common focus among administrators on the Common Core and greater coordination with teacher evaluation initiatives. First, the clustering of conversations around the Common Core may reflect the structure of meetings and professional development opportunities. Meetings and professional learning focused on the Common Core were more likely to be focused on teachers and organized based on grade-level and content area, meaning that there was less need to bring administrators together or to involve supervisors whose work focused on other subjects. These findings suggest that the design of grade- and content-specific academic standards, such as the CCSS, may present a unique challenge for coordinating the work of administrators as reform leaders (Stosich, 2018).

The nature of the professional development related to teacher evaluation suggests alternative arrangements that may have contributed to the development of administrators' social networks. In all three districts, administrators not only described spending more time in meetings and training sessions related to teacher evaluation than on those related to the CCSS, but those meetings and sessions focused on the teacher evaluation policy also involved all administrators in learning how to use a common observational framework—the Danielson Framework. Notably, the small size of these districts enabled them to bring all administrators together to learn about the framework and coordinate their efforts, which may be more difficult in larger districts. Further the Danielson Framework focuses on aspects of teaching that are presumed to apply across levels and disciplines. This collaborative and coordinated approach to professional learning related to teacher evaluation could help to facilitate social connections among administrators in different roles and could support administrators' in developing a common language and approach for supporting teachers' practice (Coburn & Russell, 2008; Kraft & Gilmour, 2016; Liou, 2016). However, some scholars argue that a focus on generic practices is insufficient for strengthening teaching and that teacher evaluation should also address pedagogical content knowledge (Hill & Grossman, 2013; Shulman, 1986). This challenge demands further investigation from researchers and policymakers seeking to understand how standards-based reforms, including standards for students and teachers, can be coordinated to support instructional improvement across grade-levels and subject areas.

While it is impossible to know the extent to which the simultaneous implementation of teacher evaluation policy and the Common Core contributes to improvements in student learning, these examples suggest that Common Core implementation may not help create a more coordinated and coherent system unless explicit efforts are made to connect individuals and groups across levels, disciplines, and roles and to take into account other major initiatives that are underway. Although further research is needed to explore these possibilities and understand what it will take to support coordination and coherence among multiple policies (Coburn et al., 2016), several policy implications seem particularly clear. First, policymakers need to pay as much attention to supporting

coordination among different policies as they do to aligning policies so that they have similar goals. Second, policymakers should take into account the time and organizational arrangements needed to develop the social relationships that can facilitate the information sharing and the development of expertise related to particular initiatives and to integrating those initiatives into work already underway. Third, these findings suggest that policymakers should also consider investing in the support that can help administrators to develop the beliefs and understanding that contribute to the relationship-building that can facilitate implementation (Daly, Liou, et al., 2014; Liou, 2016). Without such an explicit attention to building broad-based social networks, there may be no reason for district and school leaders to assume that the development of common standards will actually produce more coordinated and coherent improvement efforts.

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