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**State Educational Agencies in an Uncertain Environment:
Understanding State-Provided Networks of English
Language Arts Curricular Resources**

Serena J. Salloum

Ball State University
United States

Emily M. Hodge

Monclair State University
United States



Susanna L. Benko

Ball State University
United States

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Abstract: Rapid adoption of the Common Core State Standards (CCSS), the Race to the Top (RTTT) competition, and backlash around these policies created widespread uncertainty

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among state educational agencies (SEAs). SEAs may have not had a clear direction about how to support standards implementation in a new context, and therefore, may have looked to their professional networks, their geographic neighbors or other highly regarded SEAs, or other sources for information and resources to guide their decisions about where to send teachers for information about standards. Drawing on institutional theory (Meyer & Rowan, 1977) and isomorphism specifically (DiMaggio & Powell, 1983), we posit that coercive forces (primarily due to RTTT application and CCSS status) as compared to mimetic and normative forces influenced the organizations to which SEAs turn for curriculum materials. Using Multiple Regression Quadratic Assignment Procedure and a data set of over 2,000 state-provided resources for secondary English Language Arts teachers from all 50 states and Washington, D.C., we indeed found that coercive forces had a relationship with shared organizational ties, demonstrating that RTTT application and CCSS adoption influenced resource provision.

Keywords: Common Core State Standards; Curriculum; State Educational Agencies; Social Network Analysis; Isomorphism

Agencias educativas estatales en un entorno incierto: Comprensión de las redes de recursos curriculares de artes del idioma inglés proporcionadas por el estado

Resumen: La rápida adopción de los Common Core State Standards (CCSS), la competencia Race to the Top (RTTT) y la reacción violenta en torno a estas políticas crearon una incertidumbre generalizada entre las agencias educativas estatales (SEA). Las SEA pueden haber buscado en sus redes profesionales, sus vecinos geográficos u otras SEA de gran prestigio, u otras fuentes de información y recursos para guiar sus decisiones sobre dónde enviar a los maestros para obtener información sobre los estándares.

Basándonos en la teoría institucional (Meyer & Rowan, 1977) y el isomorfismo específicamente (DiMaggio & Powell, 1983), postulamos que las fuerzas coercitivas (principalmente debidas a la aplicación RTTT y el estado de la CCSS) en comparación con las fuerzas miméticas y normativas influyeron en las organizaciones a las que SEA Busque los materiales del plan de estudios. Usando el Procedimiento de Asignación Cuadrática de Regresión Múltiple y un conjunto de datos de más de 2,000 recursos proporcionados por el estado para maestros de artes del lenguaje inglés de secundaria de los 50 estados y Washington, DC, de hecho encontramos que las fuerzas coercitivas tenían una relación con lazos organizacionales compartidos, lo que demuestra que la aplicación RTTT y la adopción de CCSS influyó en la provisión de recursos.

Palabras-clave: Common Core State Standards; Plan de estudios; Agencias educativas estatales; Análisis de redes sociales; Isomorfismo

Agências educacionais estaduais em um ambiente incerto: Compreendendo as redes estaduais de recursos curriculares de Artes da Língua Inglesa

Resumo: A rápida adoção dos Common Core State Standards (CCSS), a competição Race to the Top (RTTT) e a reação em torno dessas políticas criaram uma incerteza generalizada entre as agências educacionais estaduais (SEAs). Os SEAs podem ter olhado para suas redes profissionais, seus vizinhos geográficos ou outros SEAs altamente considerados, ou outras fontes de informações e recursos para orientar suas decisões sobre para onde enviar professores para obter informações sobre os padrões. Baseando-se na teoria institucional (Meyer & Rowan, 1977) e especificamente no isomorfismo (DiMaggio & Powell, 1983), postulamos que as forças coercitivas (principalmente devido

à aplicação RTTT e status CCSS) em comparação com as forças miméticas e normativas influenciaram as organizações para as quais os SEAs voltar para materiais curriculares. Usando o Procedimento de Atribuição Quadrática de Regressão Múltipla e um conjunto de dados de mais de 2.000 recursos fornecidos pelo estado para professores secundários de Língua Inglesa de todos os 50 estados e Washington, DC, de fato descobrimos que as forças coercitivas tinham uma relação com laços organizacionais compartilhados, demonstrando que a aplicação RTTT e a adoção do CCSS influenciou a provisão de recursos.

Palavras-chave: Common Core State Standards; Currículo; Órgãos Estaduais de Educação; Análise de Redes Sociais; Isomorfismo

Introduction

In 2010, 44 states and the District of Columbia adopted the Common Core State Standards (CCSS; LaVenía et al., 2015). In the 10 years that followed, sweeping changes influenced multiple domains of educational policy. Many states changed their assessment systems to measure newly adopted standards. Some states also overhauled their teacher evaluation systems, using new forms of instructional observations and value-added measures. However, rapid policy changes also led to widespread backlash against the CCSS and related initiatives (McGuinn, 2012). Subsequently, some states adapted or repealed the standards and associated assessments (Korn et al., 2016; Ujifusa, 2016). In many ways, state educational agencies (SEAs) were at the center of these rapid policy changes, interpreting standards and assessments for local districts and teachers through providing professional development and guidance on curriculum, standards, and assessment.

Institutional theories of organizational behavior predict that in uncertain environments, organizations look to others for signals about an appropriate course of action, whether these are nearby organizations, those which are widely respected, or people connected to the organization through professional networks (DiMaggio & Powell, 1983). We focus here on understanding SEAs' decision-making about the curricular and professional resources they provided on their websites to support new standards for secondary English Language Arts (ELA). We know that SEAs turned to a wide variety of organizations for information about new standards during this period of uncertain implementation of the CCSS (Hodge, Salloum, & Benko, 2016); it is less clear, however, what factors may have influenced the organizations to which SEAs turned. For example, SEAs may have turned to SEAs within the same geographic region, or to other SEAs participating in the same assessment consortium, for curricular and professional resources to provide to teachers in their own states.

To assess ways that the adoption of CCSS standards may have influenced states' behavior around resource provision and to understand the factors leading states to link to the same organizations, we draw on an archival data set of state-provided instructional resources for secondary ELA. This data set was constructed to describe the national landscape of state-provided resources, including articles, curriculum guidelines, and lesson/unit plans, as well as their organizational sponsors (Hodge et al., 2016); here, we use it to test the CCSS theory of action at the national level. We use multiple regression quadratic assignment procedure (MRQAP), an inferential quantitative model appropriate for network data, to understand how various state attributes relate to the number of shared organizations to which states turned for information about new standards.

Policy entrepreneurs for the CCSS viewed the standards, at least in part, as a way to provide greater consistency in curriculum and instructional materials (e.g., Kornhaber et al., 2014). Common

standards provided an opportunity for states to share materials with each other, as well as for organizations and textbook companies to tailor their materials to one set of standards rather than individual states. These economies of scale are a fundamental part of the CCSS theory of action. However, while many states adopted the standards almost ten years ago, little is known about the extent to which this theory of action has come to fruition, as exemplified by states turning to the same organizations (or states) for information about new standards. This study not only provides a way to understand the extent to which this theory of action may or may not have been realized, but also provides a window into SEA behavior in an uncertain environment.

Literature Review

The Common Core State Standards Initiative and the Diffusion of Innovations

Sponsored by the Council of Chief State School Officers (CCSSO) and the National Governors Association (NGA), the CCSS were an initiative to create and enact a common set of standards across states. Accounts of CCSS development and adoption suggest that the process was a coordinated initiative (Rothman, 2011), spearheaded by Achieve, an educational nonprofit organization focused on college and career readiness, and small number of policy entrepreneurs who had the long-term goal of bringing greater coherence to standards and assessments in the US (McDonnell & Weatherford, 2013a). Interviews with CCSS policy entrepreneurs indicated that they viewed the CCSS as solving some of the problems with earlier iterations of standards-based reforms around a lack of coherence (Kornhaber et al., 2014). For example, although No Child Left Behind mandated annual improvement on progress towards meeting state standards, having 50 sets of standards and assessments meant that each SEA had to consistently perform complex tasks like updating standards and assessments, and coordinating vendors (McDonnell & Weatherford, 2013; Rothman, 2011).

After the CCSS were developed, the CCSSO and NGA created public relations materials to promote standards adoption as part of a coordinated initiative to ensure use of the newly written standards (McDonnell & Weatherford, 2013a). These materials, and the rapid momentum the CCSS gained as increasing numbers of states adopted the standards, may have quickly created indirect pressures and cultural expectations for states to adopt the CCSS. Additionally, federal policy initiatives created incentives to adopt the CCSS that may have pressured states to adopt standards. Around the same time that the standards were released, the federal government incentivized their adoption through the Race to the Top (RTTT) competition (LaVenía et al., 2015). SEAs' RTTT applications were scored on a rubric. SEAs earned points for "standards and assessments", in particular "developing and adopting common standards" and "developing and implementing common, high-quality assessments" (U.S. Department of Education, 2010). In a time of major recession and budget shortfalls, 46 states and DC applied for a share of over 4 billion dollars to carry out the reform plans specified in their applications, proposing dramatic policy changes to improve their chances of receiving funds (Kolbe & Rice, 2012; Kornhaber et al., 2016; Russell et al., 2014). States were required to give half of awarded funds to local educational agencies (LEAs). On average, states used most of the other half to support federal reform priorities, including improving state longitudinal data systems, improving teacher and leader effectiveness and diversity, supporting new standards and assessments, and intervening in low-performing schools (Kolbe & Rice, 2012). Technically, the standards states adopted did not have to be the CCSS, though they did need to be validated by an external body as leading to college and career readiness. However, RTTT requirements were widely interpreted as mandating CCSS adoption.

Taken together, the process of CCSS adoption and implementation, coordinated by organizations with representation from all fifty states, and further incentivized by federal dollars, could be seen as challenging typical geographic models of the diffusion of innovations. New policies or other innovations of all types often develop within one state and spread to nearby states, as in the case of state lotteries (Berry & Berry, 1990) and abortion policy (Mooney & Lee, 1995). In education, scholars have documented that even when a policy itself does not spread from one state to neighboring states, the initiating state influences other, nearby states to at least consider adopting the same policies (Mintrom & Vergari, 1998).

As related to the CCSS, LaVenia, Cohen-Vogel, and Lang (2015) used a diffusion of innovations perspective and event history analysis to examine hypotheses related to states' CCSS adoption, including regional diffusion, participation in CCSSO-sponsored professional networks, and the presence of governor-appointed state boards of education and chief school officers. LaVenia and colleagues also gauged the importance of "RTTT aspiration" on CCSS adoption, as measured by states' participation in applying for and/or winning RTTT on a month-to-month basis. The authors found that CCSS adoption was predicted by RTTT aspirations, as well as participation in standards-related policy networks and states' prior commitments to standards-based reform. Importantly, however, these researchers demonstrate that in the case of the CCSS, regional diffusion was not a significant predictor of CCSS adoption. While the CCSS and RTTT, as fairly centralized policies, represent a disruption to geographic diffusion of *standards*, they may have also created opportunities for the diffusion of *resources* across state lines. Policy entrepreneurs viewed the standards as creating economies of scale in resources and opportunities for state to share resources with each other, but it is not clear if states turned to their geographic neighbors for curricular and professional resources. Anecdotal evidence seemed to indicate that particular states, sometimes those that won RTTT funds, became known as sources of CCSS materials, such as New York's EngageNY modules (Kaufman et al., 2017).

Regardless, despite the formal or informal pressures on states to adopt the CCSS, rapid backlash to the standards occurred shortly after many states adopted the standards, leading some states to repeal or modify the CCSS after holding public hearings (McGuinn, 2012). The association between RTTT and CCSS, coupled with concurrent changes to teacher evaluation and state assessments that RTTT also incentivized, led many to view the federal government as interfering with local control and overstepping its traditional role of leaving many educational decisions to states and individual localities (Ujifusa, 2014). Soon after states adopted the standards and the RTTT competition ended, multistate assessment consortia rolled out new, CCSS-aligned assessments, and states experimented with value-added teacher evaluations linked to new assessments. This combination of changes created networks of unlikely alliances opposed to the CCSS for a variety of reasons (McGuinn & Supovitz, 2016).

The coordinated effort for new, virtually national standards, coupled with a federal incentive to adopt the CCSS, and backlash from rapid policy change and federal overreach, resulted in an environment of turbulence and ambiguity: states rapidly entered and left assessment consortia, and states swiftly adopted, repealed, and changed their standards. SEA officials were at the heart of these changes, brokering connections with teachers and LEAs, while navigating the uncertain terrain of rapidly changing state education policy.

SEAs' Role in Standards Implementation

Though education is primarily governed at the state level, SEAs are organizations responsible for the implementation of federal policy. Traditionally, SEAs have focused on compliance and monitoring, but increasingly have provided instructional guidance in the context of

standards-based reform (Murphy & Hill, 2011). SEAs provide instructional guidance to LEAs in a variety of ways, such as creating instructional materials, endorsing existing curricular materials, or providing professional development (Hodge et al., 2016). However, little research has examined the role of the SEA in college and career ready standards implementation. One notable exception is the work of Pak and Desimone (2018), who interviewed 38 SEA employees across Ohio, Kentucky, and Texas to learn about how they supported standards implementation. SEA officials viewed themselves as instructional leaders, though they provided high-level guidance while leaving specific instructional decisions to local districts. In Kentucky and Ohio, SEA officials provided model curriculum frameworks (Pak & Desimone, 2018), and all three states provided many web-based resources that they pushed out to regional and local leaders. Pak and Desimone (2018) describe how multiple elections and policy changes created an environment of uncertainty and rapid change in their three focal states, concluding that this undermined the authority of college and career ready standards.

SEAs have a wide array of choices in the instructional materials they provide to teachers, especially with the rise of Open Educational Resources (OER; Hodge et al., 2018). Recent research suggests SEAs tend to turn to one another, policy organizations, and professional organizations for CCSS instructional resources, and provide a wide variety of resource types (Hodge et al., 2016). States who turn to the same organizations signal that they are making similar choices, and viewing a set of shared organizations as legitimate sources of knowledge and information about state standards. In the case that these shared organizations are directly related to the CCSS initiative, shared ties may signal that states view these organizations as “official” knowledge sources.

In this investigation, we were curious about attributes that might lead SEAs to turn to the same organizations for materials. For instance, states have varied capacity (Brown et al., 2011) and governance structures (Smith & Gasparian, 2018), which may influence their ability to support the enactment of high standards. Capacity generally refers to the number of employees working in a SEA, as well as the knowledge and resources that they have to carry out their jobs. SEAs’ responsibilities have shifted over time from issues of compliance to instructional leadership. Recently, researchers have documented that SEAs have implemented new reforms that are supporting instructional leadership such as expanding school improvement initiatives (Childs & Russell, 2016), creating structures for tracking longitudinal data (Conaway et al., 2015), and supporting schools identified as in need of improvement (Rhim et al., 2007). Perceptions of student achievement within a particular state may also influence SEA employees’ conception of their role, as states that are widely regarded as low-performing may have a greater focus on technical assistance or state takeovers.

Governance structure may also influence how a SEA goes about standards implementation. Smith and Gasparian (2018) examined a number of state characteristics related to the degree of local control, the extent to which authority is consolidated at the state versus distributed across localities, and the level of voter participation. They then combined these classifications into eight categories of state governance structures. These categories provide a way of assessing the relationship between state governance structure and standards implementation, as states with similar overall governance structures may make similar decisions about standards implementation. In addition, traditions of local control, as one aspect of state governance, may also influence decisions about standards support (Scribner, 2016). A state with a high degree of local control may be reluctant to provide strong guidance at the state level about instructional materials, for example, preferring to signal that those decisions are left to the LEA. Pak and Desimone (2018) found that SEA officials in all three states they studied had traditions of local control, and thus, left many decisions about standards

implementation to the local level. Thus, state governance structure and local control are included as variables in this study to understand how those factors may relate to curating external resources.

Social Network Analysis as a Tool for Understanding Education Policy Networks

Many of the social network-focused studies in education in the United States have studied social capital and the flow of information through a school or district (Coburn & Russell, 2008; Daly & Finnigan, 2011; Liou, 2016; Liou et al., 2016; Supovitz et al., 2016). While these studies offer insight into how communication networks influence reform, they do not harness the full potential of SNA as (1) a visualization tool for policy networks, and (2) as a tool for predicting outcomes important in policy networks.

A few studies apply SNA to education policy networks, visualizing foundation funding (Reckhow, 2013) or the organizations advocating for charter school legislation (Au & Ferrare, 2014). Miskel and Song (2004, 2005, 2007) used SNA to visualize influential organizational coalitions in literacy policy. Hodge et al. (2016) used SNA to visualize the national network of state-provided resources for secondary ELA, providing partial insight to the CCSS theory of action by examining the extent to which states drew on resources from other states or from external organizations.

The studies described above generally use SNA as a visualization tool or for calculating descriptive features of networks such as degree centrality. SNA software also has inferential features such as MRQAP and Exponential Random Graph Models (ERGM)—currently less-common approaches to studies of education policy networks. One notable exception is the work of Galey and colleagues (2019), in which the authors used an ERGM analysis to predict the probability of a connection between a policy actor and an expressed position on teacher effectiveness at three different time points, including a variety of node attributes and network variables (Galey-Horn et al., 2019). Similarly, we use a variety of state attributes to predict the factors that may lead pairs of states to provide resources from the same states/organizations.

Institutional Theory and Isomorphism

We draw upon institutional theory to examine how SEAs navigate an uncertain policy environment. Institutional theory is useful in this case, as it explains how an uncertain environment can influence the genesis and function of structures in institutionalized organizations, including norms, rules, and routines (Meyer & Rowan, 1977). As described above, the introduction of the CCSS ushered in a period of uncertainty. Not only did states adopt new standards and assessments in a short period of time, but backlash to the standards resulted in some states repealing, replacing, or modifying the standards in subsequent years (McGuinn & Supovitz, 2016). These rapid changes led to a high degree of environmental uncertainty. In other words, SEAs may have not had a clear direction about how to support standards implementation in a new context, and therefore, may have looked to their professional networks, their geographic neighbors or other highly regarded SEAs, or other sources for information and resources.

SEAs are “institutionalized organizations,” as opposed to “technical organizations” like manufacturers (Meyer & Rowan, 1977). Whereas technical organizations define their success through clearly measurable physical input and outputs, institutionalized organizations use more opaque methods to produce outputs that are harder to measure. Institutionalized organizations create formal structures that have not only technical purposes, but also symbolic virtues. In other words, structures have socially constructed meaning, which serves not only a functional purpose but also a symbolic one: providing legitimacy. As new organizations emerge, the structures adopted are in the name of legitimacy rather than efficiency (Meyer & Rowan, 1977). Moreover, new institutionalized organizations end up with similar structures and functions as their predecessors as part of their search for legitimacy, a phenomenon also known as isomorphism. DiMaggio and

Powell (1983) argue that homogenization of organizations arises, not due to competition or efficiency, but due to processes that make institutionalized organizations similar without making them efficient. Isomorphism within SEAs is evident in how there is a relatively limited set of governance structures, generally including a state board of education and chief state school officers (Smith & Gasparian, 2018); this is likely the result of SEAs seeking legitimacy and evolving in similar ways.

This study views shared organizational ties as a signal of isomorphic change in SEAs; we seek to identify the extent of this change as well as the mechanism through which it is occurring. DiMaggio and Powell identify “three mechanisms through which institutional isomorphic change occurs” (p. 150): coercive, mimetic, and normative. While DiMaggio and Powell warn that the three mechanisms are not always easy to disentangle empirically, below we describe how each mechanism could be operating to result in shared organizational ties.

Coercive isomorphism describes the formal and informal pressures on institutionalized organizations—these pressures may come from cultural expectations and/or other organizations on which they depend. As relevant to our work, SEAs are financially dependent upon the United States Department of Education for Title funds under the Every Student Succeeds Act, and Title funds have been successfully used to coerce SEA behavior (Frankenberg & Taylor, 2015). RTTT could be seen as another coercive mechanism, as the amount of money available provided a persuasive inducement for states to adopt standards and teacher accountability reforms. In terms of cultural expectations, the momentum of the CCSS initiative, in which many states adopted the standards in a matter of months, can be thought of as creating indirect pressures and cultural expectations for widespread adoption (McDonnell & Weatherford, 2013a). Though the CCSS initiative could appear to come from state governors and chief school officers, in practice, these organizations (NGA and CCSSO) functioned as outside organizations that created cultural expectations of standards adoption. In this paper, we argue that shared CCSS adoption status and shared RTTT application status could be a proxy for coercive isomorphism.

Mimetic isomorphism occurs in the face of environmental ambiguity when an organization looks to other organizations as models for structure and behavior. One way that mimetic isomorphism may manifest is through proximity, as when states turn to their geographic neighbors as models and adopt their practices. The second way that mimetic isomorphism may be active in shaping states’ behavior is through state participation in assessment consortia (PARCC and Smarter Balance). With the shift in standards and new resulting tests to measure the implementation of standards, SEAs were left to determine how to evaluate student outcomes. Given that organizations tend to model themselves after other organizations they see as legitimate, SEAs might look to other states within the same consortium for ideas about standards implementation. While not precisely correlated with geography, Western states tended to participate in Smarter Balance rather than PARCC (Gewertz & Ujifusa, 2014), and each consortium held regular meetings for governing board members. In this paper, we argue that geographic location and/or the consortia to which a SEA belonged (or lack thereof) could be a proxy for mimetic isomorphism.

Normative isomorphism is a third source of organizational change, which comes from professionalization, or when members of an occupation define the norms of their work, rather than having those terms externally imposed. DiMaggio and Powell (1983) suggest that one aspect of professionalism important to isomorphism is the growth of professional networks that span organizations. In this case, we examine one professional network to which state ELA coordinators might belong—a subject-specific network sponsored by the CCSSO called the State Collaborative on Assessment and Student Standards (SCASS). This network may serve as a vehicle for coordinators to learn about and adopt practices from other states, to become aware of resources

from outside organizations, and to provide a space for shared professional problem-solving. We argue that membership in this group might provide knowledge that shapes organizational behavior (e.g., which resources are posted on websites) and therefore could enhance homogeneity of organizational ties.

Research Questions and Hypotheses

To learn more about the landscape of ELA resource sharing, we posed an initial research question: *Which organizations are most commonly the source of ELA resources for SEAs?* We predicted that several organizations would emerge as influential for secondary ELA resources. We also predicted that SEAs would turn to one another for ELA resources.

The primary focus of this paper is an effort to understand how SEAs behave in an uncertain policy environment. Thus, we posed the research question: *When controlling for state attributes, which (if any) mechanisms of isomorphic change—coercive, mimetic, and/or normative—are related to SEAs turning to the same organizations for ELA resources?* We predicted that coercive isomorphism will be most related to SEAs turning to same organizations. Given that this analysis is principally concerned with CCSS implementation, we hypothesized that shared CCSS status might be related to SEAs turning to similar organizations. Since the inception of CCSS, many organizations have been created to design standards-aligned curricular materials. Therefore, if states are both CCSS-adopting, we would expect them to turn to similar organizations. In addition, because many CCSS-adopting states also applied for RTTT, we predict a relationship between applying for RTTT and number of shared organizations.

We also hypothesized that the number of common organizations to which SEAs turn may be related to their approach to educational governance (Smith & Gasparian, 2018), which includes local control over curriculum. A review of state governance structures demonstrated that states generally fell into a limited set of structures (Smith & Gasparian, 2018). Thus, we expected that states may be more likely to look to states that have similar governance structures or similar levels of control over curriculum for resources. We predicted that if states have comparable approaches to governance and/or local control, they will turn to more of the same organizations.

Method

In this section, we describe the methods that guided our investigation of SEAs' shared organizational ties.

Data

The archival data used in this social network analysis were collected from the internet between August 2015 and March 2016. To collect data, our team visited 51 SEA websites (including Washington, D.C.) and located secondary ELA resources endorsed to support instruction. Resources—videos, PDFs, articles, and other media created to support ELA standards implementation—included those used for instruction (e.g., lesson and unit plans), as well as informational resources (e.g., videos about CCSS shifts). Often these resources were housed under headings such as “resources for teachers” or “Implementing Common Core.” We downloaded each resource and took note of its type (e.g., lesson plan), the organization that created it, and the ELA

topic it addressed, among other attributes. In total, we amassed over 2,000 resources (see Hodge et al., 2016 for further details).

Measures

Dependent variable. The analyses described in this paper focused on common organizations to which SEAs linked as the sponsors of secondary ELA resources. Our dependent variable was the number of shared organizations to which pairs of SEAs turned; it is important to note that “organizations” as defined here included SEAs as a type of organization providing resources. We began our analysis with an edge list that contained SEAs paired with an organizational resource sponsor. For example, if Arkansas provided a resource from Teaching Channel, Arkansas would appear in Column A, and Teaching Channel would appear in the same row in Column B. The initial data collected were two-mode in nature (i.e., organizations to which SEAs linked were considered distinct from SEAs). Using UCINET, we converted our edge list into a two-mode adjacency matrix where SEAs were in the rows and the organizations to which they turned were in the columns. Then, we used the feature in UCINET that converts two-mode data into one-mode data, called bipartite projection (Breiger, 1974). Converting our edge list in this way resulted in an adjacency matrix with SEAs mirrored in the rows and columns, where each cell contained the number of shared organizations between pairs of states. For example, Arizona and Arkansas turned to 19 of the same organizations, so the number 19 appears in the adjacency matrix in the cell at the intersection of Arizona and Arkansas.

Independent variables. In order to operationalize state attributes for this analysis, we recast each attribute as an adjacency matrix. As explained in this section, if the variable was dichotomous, the variable meant that the two states shared the attribute. If the variable was continuous, then the variable was operationalized as the absolute difference between two states on that particular variable. In line with our theoretical framework, we developed variables to test each mechanism of isomorphism (coercive, mimetic, and normative).

Our measures of coercive isomorphism include two variables: CCSS status and Phase 1 RTTT application. As described above, the coordinated effort by Achieve, NGA, and CCSSO to promote the CCSS in 2009 and 2010 may have led to normative pressures and cultural expectations to adopt the CCSS. In this investigation, we set the decision rule for CCSS status as whether states were operating under CCSS in 2015 or not, since 2015 was the year state-provided resources were collected (Hodge et al., 2016). States that both had CCSS were given a 1 in the adjacency matrix; in addition, states that did not have CCSS (regardless if it was because the state repealed or never adopted the CCSS) also were given a 1 in the adjacency matrix because they shared non-CCSS status. In cases where one state had CCSS and the other did not, they were given a 0 in the adjacency matrix.

We hypothesized that applying for RTTT could be related to the organizations to which SEAs turned for ELA resources. We imagined that applying to RTTT could have a relationship with CCSS status because states had to adopt college and career readiness standards to apply for RTTT regardless of whether or not they received funding. Therefore, an application to RTTT means that SEAs adopted college and career ready standards and would need to provide resources to assist teachers with standards implementation. We operationalized RTTT application in this analysis by giving pairs of SEAs a 1 in the adjacency matrix if they both applied to RTTT in the first phase. If their status was not the same (an applicant and a non-applicant), state pairs were given a 0.

We included two variables to represent mimetic isomorphism: assessment consortium participation and geographic region per the U.S. Census Bureau (Northeast, South, Midwest, West). We included assessment consortium membership because states that belonged to a consortium met

regularly, shared resources, and had the same networks of information available to them. Therefore, this could result in states turning to others within the same network for ideas about legitimate organizations providing CCSS resources. We included a variable for states' shared participation as a member or affiliate in either of the two testing consortia as of 2015—states were coded as participating in a consortium or not. The second variable representing mimetic isomorphism was geographic region, as typical models of state-to-state diffusion describe one state looking to its proximate neighbors and imitating their behavior.

Normative isomorphism describes individuals' professional networks as influential in shared organizational ties. To model normative isomorphism, we included a variable representing a key professional network to which state ELA coordinators may belong: the CCSSO-sponsored state collaborative group called SCASS. Membership included those states that participated in ELA SCASS meetings in 2014–15.

Control variables. We also included several state attributes that we hypothesized could influence the number of shared organizational ties between states: student achievement, RTTT status, governance structure, local control, political party of the governor, network structure (core-periphery, as described below), and number of external resources SEAs provided for ELA teachers. Consistent with the requirements for MRQAP, we recast those variables as adjacency matrices.

We conjectured that a measure of student achievement might have a relationship with how engaged the SEA was in supporting teachers' instruction. In other words, states with high NAEP achievement scores may feel less pressure to provide resources from either external or internal resources. Thus, we included an adjacency matrix that captured the difference in the National Assessment of Education Progress (NAEP) in states' average eighth grade reading scores at the time the outcome measure was collected (2015–2016).

We also included shared RTTT status (winning or losing) as a shared organizational characteristic. Whereas RTTT *application* could be considered linked to a state's decision to adopt the CCSS and therefore related to resource provision from coercive isomorphism, RTTT *winning* may influence the type of resources states provide for a more instrumental reason. Some states like New York used RTTT funds to create curricular resources rather than seeking resources from external organizations. Therefore, we wanted to control for RTTT winning.

Because shared organizational structures are an important signal of isomorphic change, we accounted for how shared organizational structure may influence shared organizational ties. In other words, isomorphism is both a variable of interest and a control variable. To operationalize education governance, we relied on two discrete measures developed by Smith and Gasparian (2018) in their typology of state governance structures. They reviewed state legislation across three aspects of educational governance: (1) the degree of control at the state level (how much control the SEA has compared to the LEA); (2) the distribution of authority (a signal of distributed authority is that decisions are made across a variety of agencies); and (3) the degree of voter participation (to what extent are leaders selected by voters or appointed). Smith and Gasparian (2018) used these three categories to classify states into a total of 8 possible designations describing SEA governance: (1) state-consolidated participatory; (2) state-distributed participatory; (3) state-consolidated restricted; (4) state-distributed restricted; (5) local-consolidated participatory; (6) local-distributed participatory; (7) local-consolidated restricted; and (8) local-distributed restricted (see Smith & Gasparian, 2018, pp. 132–133). In our analysis, states were given a 1 in the adjacency matrix if they shared the same type of governance structure (see Table 1).

Table 1

State Governance Classification

Classification	States
State-Consolidated Participatory	Alabama, District of Columbia, North Carolina
State-Distributed Participatory	California, Mississippi, Nevada, New Mexico, Tennessee, Texas, Washington
State-Consolidated Restricted	Arkansas, Connecticut, Hawaii, Iowa, Maryland, Massachusetts, New York, Pennsylvania, Rhode Island, Vermont, West Virginia
State-Distributed Restricted	Illinois, Michigan, New Jersey, Oklahoma
Local-Consolidated Participatory	Colorado, Utah
Local-Distributed Participatory	Georgia, Kansas, Louisiana, Missouri, Montana, Nebraska, North Dakota, Ohio, Wyoming
Local-Consolidated Restricted	Delaware, Florida, Idaho, Kentucky, South Carolina, South Dakota, Virginia
Local-Distributed Restricted	Alaska, Arizona, Indiana, Maine, Minnesota, New Hampshire, Oregon, Wisconsin

Note. Adapted from Smith & Gasparian, 2018, pp. 132–133

We controlled for a measure of local control over curriculum, thinking that states with strong traditions of local control might provide fewer resources on the SEA website, as these resources could be seen as infringing on district decision-making. To operationalize local control, we used an indicator Smith and Gasparian called “curriculum guidelines” (see Smith & Gasparian, 2018, Table 2, pp. 134–135). States were given a score from 0–2 to represent their level of control over curriculum, where 0 represented more centralized control and 2 represented more local control. For example, in some states, schools or districts are allowed to write their own curriculum guidelines (more local control), and in other states, districts work with the state to write curriculum guidelines (more centralized control). Again, in our analysis, states were given a 1 in the adjacency matrix if they had the same approach to guiding curriculum per Smith and Gasparian’s classification.

We also controlled for the party of the governor, which might shape the SEA’s approach to providing curricular materials (i.e., Republican governors might endorse more decentralized approaches to education governance which could have implications for curricular guidance). Thus, states were given a 1 in an adjacency matrix if their governors shared the same party and a 0 if they did not share the same party.

We also included the absolute value of the difference between two states’ number of external resources. This variable is an important control because states with large numbers of external resources could be more likely to have higher numbers of shared organizational ties simply due to probability. In other words, two states that both provide many external resources may have a higher likelihood of those resources coming from the same place as a function of the number of resources.

Additionally, we included a measure to control for the network structure, in this case core-periphery. A network with this kind of structure can be seen as having two kinds of nodes: core nodes, which are connected to other core nodes and peripheral nodes; and peripheral nodes, which are connected only to core nodes (Borgatti, Everett, & Johnson, 2013, p. 161). To account for this structure, we ran a core-periphery correlation in UCINET to determine how strongly the state resource network matched the “ideal” core-periphery structure; this measure correlates the data against ideal scores where each core actor is given a 1, and each peripheral member is given a 0 (see Figure 2 below for core and peripheral SEAs). As operationalized in this study, SEAs were given a 1 in the adjacency matrix if they shared their core-periphery status (i.e., both were core nodes) and a 0 in the matrix if they did not share their status (i.e., one SEA was core, and one was peripheral).

In summary, we view SEAs making similar choices about the organizations they turn to for standards resources as a signal of isomorphic change brought about by an uncertain policy environment. To understand what type of isomorphic change is occurring, our model includes variables representing each of the three types of isomorphism (coercive, mimetic, and normative), as well as several important state attributes (see Figure 1).

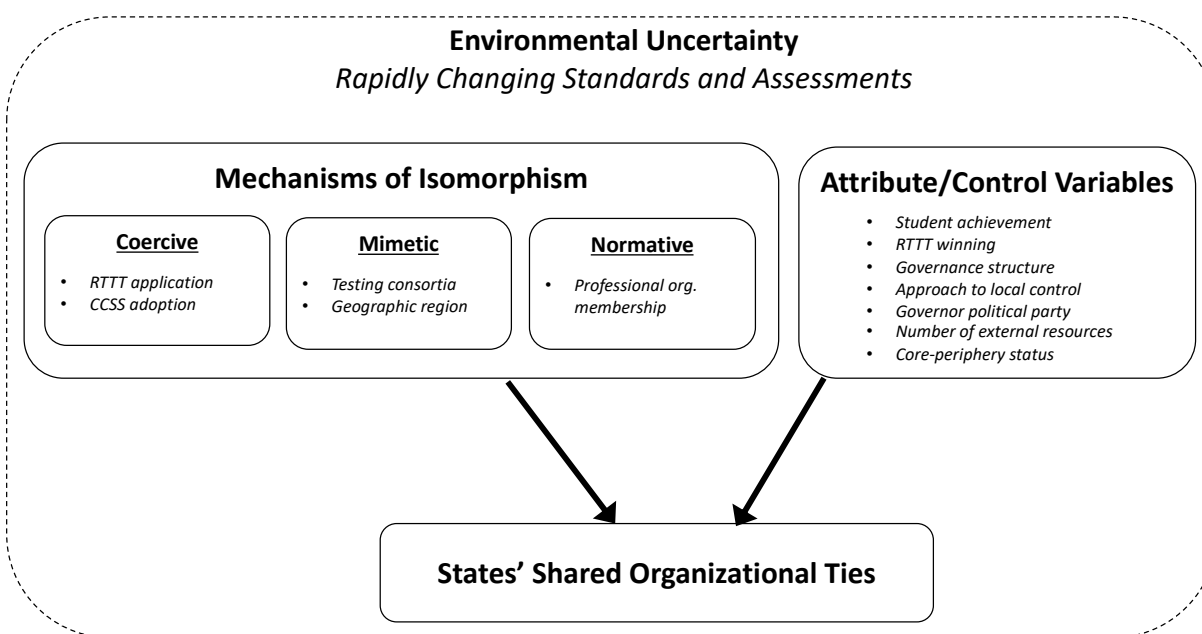


Figure 1. Theoretical model: How isomorphism may relate to SEAs' shared organizational ties

Analysis

To understand the landscape of organizational resource sponsors during CCSS implementation, we conducted a descriptive analysis of state-provided resource sponsors. We calculated the average number of external resources and the average number of external organizations SEAs turned to for those resources. We also rank ordered organizations according to their degree centrality, or the number of SEAs turning to a particular organization for resources.

We relied on social network analysis to test our second research question (Borgatti et al., 2002; Scott, 2000; Wasserman & Faust, 1994). We began by creating a sociogram of the outcome variable to understand the network structure. We conducted a correlation analysis to assess particular variables' potential association with the outcome and each other. Given that our outcome

was a dyadic relationship (the number of shared organizations to which states turned) and observations were not independent, Multiple Regression Quadratic Assignment Procedure (MRQAP) was appropriate for this analysis (Krackhardt, 1988). MRQAP is a nonparametric inferential test for an association between two or more matrices with complex dependencies (Cranmer et al., 2017). MRQAP shuffles the rows and columns in a network to preserve the dependency structure, but removes the dependency in associations. However, MRQAP in Krackhart's (1988) original formulation assumed a fair degree of independence between independent variables. Because network variables are often inherently dependent, we use the semi-partialling "Double Dekker" (Dekker et al., 2007) MRQAP in UCINET.

Results

We began our analysis with a descriptive analysis of all 51 SEAs (50 states and Washington, D.C.). All data reflect SEAs' attributes during the year data were collected, 2015–2016. The average SEA served just about a million students in K–12 (981,265; NCES, 2015). SEAs were split nearly in half by governing party, with Democratic governors representing a slight majority (52.9%). Most states were operating under the CCSS in 2015–2016 (86.3%). Four SEAs never adopted CCSS (Alaska, Texas, Virginia, Nebraska); three SEAs repealed CCSS (Indiana, Oklahoma, South Carolina); and one SEA only implemented the CCSS ELA standards (Minnesota; for our purposes, we include Minnesota in the count of CCSS-implementing states due to their ELA adoption). About a third of SEAs won RTTT funds ($N=19$, 37.3%). The average scaled score in eighth-grade NAEP Reading was 264.8 ($SD=5.75$).

There were a variety of organizations that sponsored ELA resources including policy and literacy organizations, SEAs, universities, and more. Table 2 lists the organizations five or more states turned to as resource sponsors. Several SEAs appear in this list: New York, Delaware, Kansas, North Carolina, and Louisiana. Closely examining the organizations in the "top 10," several were the direct sponsors or closely linked to the CCSS initiative (NGA, CCSSO, Achieve); one was founded by the CCSS lead authors to support standards implementation (Student Achievement Partners); and two are professional organizations for literacy and/or ELA teachers (ILA and NCTE).

Our first research question focused on identifying the degree to which SEAs turned to external organizations for CCSS ELA resources. SEAs provided, on average, 27.18 external resources sponsored by 12.35 external organizations (see Table 3). SEAs that provided all or almost all internally generated resources were Indiana, Louisiana, Maryland, New Mexico, Mississippi, Pennsylvania, Tennessee, and Virginia. SEAs with high proportions of externally generated resources were North Dakota, Oklahoma, Oregon, and Wyoming (because resources could be co-sponsored by more than one organization, the number of external organizational ties was higher than the number of external resources in a few cases).

Table 2

SEAs and Organizations Most Commonly Named as Sponsors of CCSS

Organization/SEA	# of SEAs Linking to Org/SEA	% of SEAs Linking to Org/SEA
1. Council of Chief State School Officers	30	58.8%
2. National Governors Association	25	49.0%
3. Student Achievement Partners	24	47.1%
4. International Literacy Association	17	33.3%
5. Achieve	16	31.4%
6. National Council of Teachers of English	16	31.4%
7. Council for Great City Schools	15	29.4%
8. Public Broadcasting Service	14	27.5%
9. Teaching Channel	14	27.5%
10. National Association of State Boards of Education	13	23.5%
11. New York State Department of Education	9	17.6%
12. The Hunt Institute	9	17.6%
13. Engage New York	9	17.6%
14. ASCD	8	15.7%
15. Vermont Writing Collaborative	7	13.7%
16. Reading Rockets	6	11.8%
17. National Writing Project	6	11.8%
18. National Education Association	6	11.8%
19. Literacy Design Collaborative	6	11.8%
20. Delaware Department of Education	6	11.8%
21. America Achieves	6	11.8%
22. Kansas State Department of Education	6	11.8%
23. LearnZillion	6	11.8%
24. OER Commons	5	9.8%
25. New York City Department of Education	5	9.8%
26. North Carolina Department of Public Instruction	5	9.8%
27. MetaMetrics	5	9.8%
28. Louisiana Department of Education	5	9.8%

Table 3

Number of External Resources and Organizations to Which SEAs Turned for ELA Resources

SEA	# of external resources	# of organizations	SEA	# of external resources	# of organizations
AKDOE	16	14	MTDOE	9	9
ALDOE	1	1	NCDOE	17	3
ARDOE	95	43	NDDOE	4	4
AZDOE	84	37	NEDOE	43	28
CADOE	24	10	NHDOE	37	19
CODOE	17	12	NJDOE	29	21
CTDOE	15	13	NMDOE	0	0
DCDOE	4	2	NVDOE	6	1
DEDOE	74	19	NYDOE	14	5
FLDOE	2	1	OHDOE	14	7
GADOE	9	10	OKDOE	21	17
HIDOE	43	20	ORDOE	157	38
IADOE	3	3	PADOE	7	7
IDDOE	146	28	RIDOE	85	23
ILDOE	19	10	SCDOE	3	2
INDOE	2	2	SDDOE	7	3
KSDOE	38	24	TNDOE	1	1
KYDOE	16	15	TXDOE	8	5
LADOE	4	3	UTDOE	29	7
MADOE	17	5	VADOE	3	2
MDDOE	2	2	VTDOE	76	42
MEDOE	24	19	WADOE	6	4
MIDOE	2	2	WIDOE	39	24
MNDOE	10	7	WVDOE	32	19
MODOE	30	23	WYDOE	42	14
MSDOE	0	0			

Average Number of External Resources: 27.18

Average Number of Organizations: 12.35

In this analysis, we defined an organization as any entity that sponsored resources and did not delimit type; thus, SEAs could also turn to one another for resources. There were a total of 4,368 instances of pairs of states turning to the same organizations (including SEAs as sponsors of resources) and 2,550 SEA connections ranging from 0–19 (Arizona and Arkansas turned to 19 of the same organizations). The average pair of SEAs shared 1.71 organizations. To illustrate, Illinois and Delaware, both CCSS states at the time of data collection, linked to five of the same organizations as resource sponsors (i.e., had five shared organizational ties): Achieve, CCSSO, the Council of Great City Schools, NGA, and the National Association of State Boards of Education. Geographic region is also a common means of diffusion. Although not direct neighbors, the two West Coast states of Arizona and Oregon had 10 shared organizational ties: Achieve, ASCD, CCSSO, ILA, LearnZillion, New York City Department of Education, OER Commons, Student Achievement Partners, Teaching Channel, and WestEd. However, both states had high numbers of external resources, which increases the chances that they would have shared organizational ties. While we are unable to compare the extent to which SEAs had shared organizational ties before the CCSS, this list provides insight into the attributes that *may* be related to shared organizational ties—attributes that we test in this manuscript.

Network Structure

As part of this analysis, we examined network structure. Figure 2 illustrates the sociogram of shared organizational ties. Apparent in this figure is the core-periphery structure. As depicted below, core nodes are red and peripheral nodes are blue. As confirmation, a correlation between our data and the idealized structure is 0.90, indicating a strong core-periphery structure.

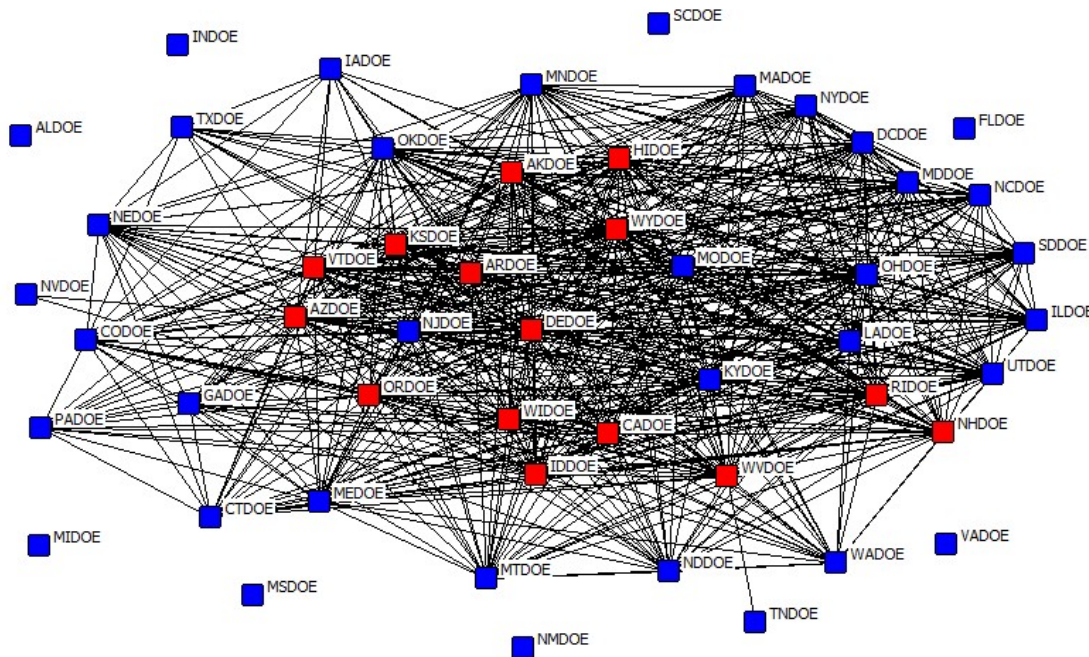


Figure 2. Network structure

Note. Red nodes coded as core; blue nodes coded as peripheral.

QAP Correlation Results

Consistent with regression designs, we first conducted a QAP correlation analysis (with 5,000 permutations) to assess whether particular variables might be associated with the outcome, as well as to ensure that our variables did not exhibit multicollinearity, and thus could each serve as an independent variable. The results of the QAP correlation analysis are provided in Table 4. The dependent variable of interest, the number of shared organizations to which SEAs turn, was correlated with a few variables: shared RTTT application in phase 1 ($r=.193, p=.018$); shared CCSS status ($r=.168, p=.044$); a relationship with shared approach to state governance ($r=.05, p=.052$); shared approach to curriculum guidelines ($r=.116, p=.007$); and NAEP reading scaled scores, which while statistically significant is not substantively important ($r=.000, p=.001$). Moreover, states were more likely to turn to more of the same organizations if they either both applied or did not apply to RTTT in phase 1, shared CCSS status, had similar approaches to state governance, offered similar guidance on curriculum, or had similar scores on eighth-grade NAEP in 2015–2016.

When considering coercive forces, shared CCSS status had more correlations to variables in this analysis as compared to applying to RTTT or shared RTTT winning status. There was a small, negative, and significant relationship between winning RTTT (or not) and CCSS status ($r=-.051, p=.032$). Also, there was a small but significant correlation between the absolute number of external resources states posted on websites and CCSS status ($r=.097, p=0.066$). There was a relationship between CCSS and geographic location ($r=-0.033, p=0.066$). Finally, there were trivial but statistically significant correlations between NAEP eighth-grade reading and two variables: CCSS status and SEAs offering similar guidance on curriculum.

When considering variables that signaled normative change, shared political party of the governor had a correlation with shared RTTT status ($r=.153, p=0.005$). Also present, was a small correlation with shared RTTT application status ($r=.037, p=0.076$). SCASS membership did not have any significant correlations with any variables tested.

When testing mimetic change, shared status in a testing consortia did not have significant relationships with any variables in the model. However, geographic location had a small, negative relationship with CCSS status ($r=-0.033, p=0.066$), a positive relationship with approach to curricular guidance ($r=.050, p=.067$), and a significant, positive relationship with shared governance. Finally, there was a moderate, negative correlation between the absolute difference in the number of external resources a state provided and shared core/periphery status ($r=-0.525, p=0.000$).

Table 4
QAP Correlation Table

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. Shared Orgs	-											
2. RTTT Application	0.193*											
3. CCSS Status	0.168*	0.051										
4. RTTT Winner	-0.004	-0.029	-0.051*									
5. Governor Party	-0.015	-0.015	0.024	0.000								
6. Geographic Location	-0.012	-0.025	-0.033~	0.032	-0.005							
7. Testing Consortia	0.059	-0.039	0.052	-0.019	0.000	0.017						
8. SCASS	-0.050	-0.074	-0.060	-0.019	-0.017	0.001	-0.019					
9. NAEP 8th Reading	0.000***	0.000	0.000~	0.000	0.000	0.000	0.000	0.000				
10. Curriculum Guidelines	0.116**	0.050	0.028	-0.020	-0.021	0.050~	0.033	-0.016	0.000			
11. Government Structure	0.050~	-0.025	0.012	0.007	-0.033	0.099**	0.007	-0.021	0.000~	0.007		
12. # of External Resources	0.218*	0.103	0.097	0.036	0.007	-0.025	0.041	-0.063	0.000	0.009	0.007	
13. Core v. Periphery	-0.036	-0.080	-0.061	-0.027	-0.008	0.044~	-0.027	-0.017	0.000*	-0.011	-0.003	-0.525**

Notes. *** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$, ~ $p \leq 0.1$

The QAP correlation models were run with 5,000 permutations.

MRQAP Results

To understand the variation in our dependent variable, the number of organizations SEAs share, we ran MRQAP with 2,000 permutations (Table 5). Our model accounts for over 12% of the total variation in the outcome. When controlling for other variables, it appears that more variables that signaled coercive change had a statistically significant relationship with our outcome as compared to mimetic or normative isomorphism.

Table 5
MRQAP Regression Model

Variable	B	Std. Errors	B	<i>p</i>
Constant	-0.784***	0.000	0.000	0.000
RTTT Application	0.933*	0.427	0.167	0.023
CCSS Status	0.829~	0.546	0.136	0.076
RTTT Winner	0.025	0.200	0.005	0.386
Governor Party	-0.067	0.105	-0.013	0.250
Geographic Location	-0.082	0.163	-0.014	0.333
Testing Consortia membership	0.252	0.205	0.048	0.112
SCASS membership	-0.045	0.315	-0.008	0.487
NAEP 8th Reading	0.000	0.000	0.000	1.000
Curriculum Guidelines	0.554*	0.179	0.101	0.011
Government Structure	0.390*	0.214	0.051	0.048
Number of External Resources	0.017*	0.008	0.245	0.010
Core v. Periphery	0.621*	0.350	0.118	0.038
R ²	0.122			

Note. *** $p \leq 0.001$, ** $p \leq 0.01$, * $p \leq 0.05$, ~ $p \leq 0.1$

The MRQAP model was run with 2,000 permutations.

Coercive forces of isomorphism. First, when controlling for state attributes, shared RTTT application status in phase 1 had a positive and statistically significant relationship with shared organizational ties ($\beta = 0.17$, $p \leq 0.05$). In addition, shared CCSS status had a positive and statistically significant relationship with turning to the same organizations for ELA resources. In fact, when SEAs shared CCSS status, they were .14SD ($p \leq 0.1$) more likely to turn to a higher number of the same organizations.

Mimetic forces of isomorphism. Neither shared geographic location, nor shared testing consortia status had a relationship with shared organizational ties when controlling for other variables in the model.

Normative forces of isomorphism. Membership in SCASS did not have a relationship with shared organizational ties when controlling for other variables in the model.

Control variables. Several control variables had relationships with shared organizational ties when taking all variables into account. There is a small but statistically relationship between governance structure and turning to the same organizations ($\beta = 0.05$, $p \leq 0.05$). In other words, when SEAs had similar approaches to the degree of authority, participation, and level of control, they were

more likely to turn to the same organizations for ELA resources.¹ Our proxy for local control, degree of control over curriculum, had a statistically significant relationship with the number of common organizations. SEAs with a similar approach to local control over curriculum were $.10SD$ ($p \leq .05$) more likely to turn to the same organizations for ELA resources. SEAs that had similar core/periphery status were $.12SD$ ($p < .05$) more likely to turn to similar organizations. Finally, as expected, posting a similar number of shared external resources was related to shared organizational ties ($\beta = .24$, $p \leq .05$). In the next section, we discuss the meaning and implications of these findings.

Discussion

In this paper we posed two questions: (1) Which organizations are most commonly the source of ELA resources for SEAs? and (2) When controlling for state attributes, which (if any) mechanisms of isomorphic change—coercive, mimetic, and/or normative—are related to SEAs turning to the same organizations for ELA resources? In this section, we discuss how our analyses respond to these questions, make connections to the extant literature, and pose directions for future research.

Organizations to Which SEAs Turn for ELA Resources

SEAs provided, on average, 27.18 external resources sponsored by 12.35 external organizations. When examining the top 10 organizations, several were the direct sponsors or closely linked to the CCSS initiative (NGA, CCSSO, Achieve); one was founded by the CCSS lead authors to support standards implementation (Student Achievement Partners); and two are professional organizations for literacy and/or ELA teachers (ILA and NCTE). Most of the organizations to which SEAs turn for ELA resources are policy or CCSS-specific organizations, rather than professional organizations. This may mean that professional organizations did not directly create materials themselves, or perhaps that they did not raise SEAs' awareness of their materials, thus missing opportunities to influence standards implementation. It could also be the case that SEA officials perceived resources coming from "CCSS organizations" as being more legitimate sources of knowledge about standards.

In this data set, there were 4,368 SEA connections to organizations sponsoring ELA resources. When analyzing the number of organizations SEAs had in common, the average pair of SEAs shared 1.71 organizations, though this ranged from 0–19. On the high end, for example, Arizona and Arkansas turned to 19 of the same organizations. Both were CCSS states, and they provided resources from many of the same organizations. That pairs of SEAs are turning to more than one common organization, on average, in a large and diverse network of resource providers, may signal that there are particular providers getting traction across many SEAs as valid sources of information about ELA instruction. However, the large range in the number of shared organizational ties also indicates a great deal of variability in the consistency of states' information-seeking from organizations, including other states.

Another noteworthy point is the overall structure of the network, characterized as a core-periphery structure. SEAs that were in the core are connected to core and peripheral SEAs. SEAs in the periphery were only connected to SEAs in the core. This indicates that SEAs in the core were

¹ Recall that Smith and Gasparian (2018) define distribution of authority as the degree to which a SEA has consolidated control over education governance (consolidated authority) or shares governance responsibilities with other entities, including school districts (restricted authority; p. 130). They define degree of participation as the extent to which state-level education leaders and policy makers are elected by the public (participatory process) or appointed (restricted process; pp. 130–131).

turning to similar organizations, whereas those in the periphery might have connected to fewer of these organizations, or even none (in the case of isolates). As related to the CCSS and states' access to information, one cadre of states has more connections to other states and organizations in the core, and most likely, to similar sets of knowledge. States on the periphery may be less connected to that knowledge. States' positions in the core or the periphery could be intentional or unintentional. State ties are likely related to their knowledge (or lack thereof) of organizations providing CCSS resources. States' organizational ties may also reflect a deliberate choice about political signaling—a state wanting to position itself as close to the CCSS initiative or apart from it. However, a core-periphery structure still has more efficient information transfer than other, insular network structures like cliques (Johnson, Boster, & Palinkas, 2003).

State Attributes and Shared Organizational Ties

Our analyses reveal six variables that relate to the number of common organizational ties between pairs of SEAs: shared status in applying (or not applying) to RTTT, shared CCSS status, shared style of educational governance, shared approach to curriculum guidelines, shared core/periphery position in the network, and having similar numbers of external resources. However, the variables with the largest effect sizes are similar number of external ties ($\beta = .25$), shared RTTT application status in Phase 1 ($\beta = .17$), and CCSS adoption status ($\beta = .14$). In our model, this illustrates that our operationalization of coercive forces and control variables were the only statistically significant factors that related to SEAs turning to the same organizations. We explain each of these relationships below.

Coercive. Coercive variables in this model were operationalized by states deciding to apply to RTTT in the first round, as that incentive could well have served as a coercive inducement to adopt standards. That shared RTTT-application status is significant lends further evidence to the idea that RTTT was a coercive force shaping states' behavior. This confirms the findings of other research on the importance of RTTT aspirations (LaVenía et al., 2015), but extends those findings from RTTT's influence on CCSS adoption to RTTT's influence on approaches to CCSS implementation. Unlike LaVenía and colleagues, we did not find an effect of participation in national policy networks, at least for state ELA coordinators participating in the CCSSO-sponsored ELA SCASS.

CCSS adoption status also had a marginally significant relationship to shared organizational ties. This could indicate that the widespread adoption of the standards, which built momentum before RTTT, created cultural pressures to adopt the CCSS (an informal coercive force). In general, however, that CCSS adoption has a relationship with shared organizational ties, but was not significant ($p \leq .05$) on its own, likely means that RTTT and CCSS together operated in a similar way to shape states' behavior and reinforced each other as coercive forces.

Note that this relationship of shared CCSS status works in both directions—pairs of states with *shared CCSS status* had a similar, but larger, number of shared organizational ties on average. Pairs of states with *shared non-CCSS status* had similar, but smaller, numbers of shared organizational ties. This aligns with what one might expect: states that adopt the CCSS can ostensibly turn to the many explicit CCSS-focused organizations for resources, while states that did not adopt or repealed the standards likely would not link to organizations associated with the CCSS, or would link to resources generated within the state that other states would not be likely to use.

Further, this indicates that the CCSS shaped SEAs' work in terms of how agencies directed teachers towards resources—but perhaps via the coercion RTTT provided to adopt the standards, rather than via standards adoption itself. It also matters that of all mechanisms of isomorphism, coercive mechanisms are the only ones that were significant—this speaks to the potential of

incentives as a form of coercive isomorphism that can be important for change. Incentives can be critical in accomplishing particular policy goals, especially in times of budget shortfalls (Hodge, 2018).

Mimetic. We hypothesized that there would have been opportunities for states participating in the same assessment consortium to talk to each other and learn about each other's practices, thus disseminating similar resources across a network of connected states. However, states' shared participation in a testing consortium had no relationship with shared organizational ties in our model. This may have been because our data collection focused on resources for curriculum and instruction and did not include resources regarding assessment; thus, we may not have collected resources provided on a state website from a testing consortium. Assessment consortia may have had the goal of bringing states together for coordinated action around standards implementation, but this does not seem to be the case, at least in terms of shared curricular resources.

Perhaps more interestingly, however, geographic region also did not have a significant relationship with shared organizational ties. Geographic diffusion of innovations is a typical method of diffusion (e.g., Mintrom & Vergari, 1998), but the CCSS seem to be interrupting geographic diffusion. Similar to LaVenita et al.'s (2015) finding that decisions about CCSS adoption did not seem to operate through regional diffusion, neither do decisions about CCSS implementation. Neighboring states did not seem to turn to the same sources for ELA resources (including resources from neighboring SEAs, as well as external organizations).

Normative. The variable representing professional association membership was not significant, meaning that SEA coordinator participation in a professional network was not associated with shared organizational ties between pairs of states. The CCSSO ELA SCASS was a group through which CCSSO was disseminating information about the CCSS. While this may have shaped ELA coordinators' thinking and approaches, it was not evident through common sponsors of web-based resources on state sites.

Control variables. We made sure to control for the number of external resources with the rationale that states providing *more* resources could be more likely to have more shared organizational ties. That the number of the external resources was significantly related to shared organizational ties confirms the importance of this variable as a control. In addition, we controlled for network structure—if a SEA was considered either core or peripheral to this network. Again, common network position had a relationship with shared organizational ties, thus the impetus for including this measure as a control variable.

The variable capturing curriculum guidelines examines the extent to which the creation of curriculum is controlled at the state or district levels (Smith & Gasparian, 2018). A shared approach to local control over curriculum was also significant, meaning that states with shared approaches to providing guidance to LEAs over curriculum are more likely to call on the same organizations. To the extent this measure signals state versus local control over curriculum and instruction, it is plausible that if SEAs are committed to traditional views of local control, SEA officials may feel that providing any instructional resources might be seen as interfering with local control over instructional materials (Pak & Desimone, 2018; Scribner, 2016).

Similarly, shared state governance structure had a marginally significant relationship with shared organizational ties. If two SEAs had a similar style of governance, they went to more of the same organizations for resources. The variable used to represent educational governance in the model was a composite of different dimensions of governance. The variable accounts for the degree to which authority over education was consolidated at the state level, the overall level of state versus local control, and how democratic the mechanisms are through which state officials are given

positions with authority over education. Shared governance structure is a signal that isomorphic change has occurred, which lends support for our theoretical framework of isomorphic change: states with a shared organizational structure also demonstrate similar behavior in terms of their resource provision and shared organizational ties.

Implications

Policy entrepreneurs for the CCSS viewed the adoption of common standards as an opportunity to provide greater uniformity in curriculum and potentially instruction. Common standards enable the potential for economies of scale, where states are able to share resources across state lines and textbook companies are able to provide CCSS-aligned materials rather than tailoring materials for a particular state (Kornhaber et al., 2014, 2017). Our analysis illustrates that the CCSS theory of action is happening to some degree. We observe states with shared CCSS status turning to the same organizations for instructional materials (Kornhaber, Griffith, & Tyler, 2014; McDonnell & Weatherford, 2013). While we do not know from this particular analysis if they are turning to the same *materials*, it is plausible that organizations are creating curricular materials that are aligned and coherent for SEAs to use. Our previous analysis of materials from the 10 organizations to which the highest number of SEAs turned found some clusters of frequently provided individual materials, including the CCSS Appendix A (11 states) and either the original or revised Publisher's Criteria (13 states; Hodge et al., 2020). Taken together, these two studies provide suggestive evidence that there may be increased coherence in instructional guidance across states.

This study has implications for state-level officials and for members of national organizations like the National Governors Association and the Council of Chief State School Officers. For those at the national level, our findings demonstrate that the adoption of common standards has influenced states' behavior in terms of resource provision. Because of the decentralized education system in the United States, efforts to support the quality of curricular resources will have to come from organizations or states themselves. State efforts to provide concrete instructional materials may interfere with perceptions of local control, making it difficult for states to endorse materials. Variables related to coercive isomorphic processes were significant, which suggests that, similar to other research findings, change often occurs through a mandate or a strong incentive. For equity-oriented changes in particular, reforms are unlikely to occur without mandates (Welner & Oakes, 2005), and incentives can often serve as strong policy tools to induce states to adopt particular policies (Hodge, 2018).

This study does have some limitations. While the analytic procedure we used does better account for the interdependencies of network data than the initial iteration of MRQAP, it is possible that using an analytic tool such as exponential random graph models (ERGM) would provide different results. Future research might use different analytic approaches to examine the model. Similarly, the way that we operationalized these variables, as well as variables that we left out of the model, likely influenced our results and the amount of variance we were able to explain. For example, our measure of normative isomorphism (state coordinators' membership in SCASS) was not as robust as our other proxy variables for isomorphism, which in part, might explain our lack of findings. There may be communication networks of state coordinators of which we were unaware and thus did not account for in this model. Finally, while explaining the predictors of shared organizational ties is important, this analysis does not identify which shared organizational ties are most common or the actual materials states are directing teachers towards. However, this paper offers an important first step in providing quantitative evidence for the extent of shared organizational ties between states and the mechanism(s) of isomorphism shaping those ties. We demonstrate that RTTT served as a powerful inducement to states not just in adopting the CCSS,

but in shaping subsequent decisions about the types of resources to provide and the organizations seen as legitimate sources of knowledge about ELA instruction under college and career ready standards.

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About the Authors

Serena J. Salloum

Ball State University

sjsalloum@bsu.edu

<https://orcid.org/0000-0002-8351-2698>

Serena J. Salloum is an Associate Professor of Educational Leadership at Ball State University. She is interested in how school context facilitates educational outcomes. In particular, she focuses on how organizational culture and structure promotes equity in high poverty schools. Current projects include investigating the instructional resources State Educational Agencies endorse for Common Core implementation and implications for classroom instruction and how early career teachers' planning and enactment of mathematics instruction is influenced by their social network members and social context.

Emily M. Hodge

Montclair State University

hodgee@montclair.edu

<https://orcid.org/0000-0003-4165-8039>

Emily M. Hodge, Ph.D., is an assistant professor in the Department of Educational Leadership at Montclair State University. She received her PhD from the Department of Education Policy Studies at the Pennsylvania State University. Her work uses qualitative methods and social network analysis to understand the changing nature of strategies for educational equity. Recent projects have explored how educational systems, schools, and teachers negotiate the tension between standardization and differentiation in the context of the Common Core State Standards, and the varied strategies state education agencies are using to support standards implementation.

Susanna L. Benko

Ball State University

slbenko@bsu.edu

<https://orcid.org/0000-0003-1276-3462>

Susanna L. Benko is an associate professor of English at Ball State University, where she teaches courses about writing pedagogy and young adult literature. She is also the Director of the Indiana Writing Project and Director of English Education. As a teacher and researcher, she is interested in the teaching of writing—in practice and in policy—at middle and secondary levels. Her work has been published in journals such as *Journal of Literacy Research*, *English Education*, *Journal of Adolescent and Adult Literacy*, and *English Teaching: Practice and Critique*. Prior to her work at Ball State, she taught middle and high school English in Indiana and Pennsylvania.

About the Guest Editors

Emily M. Hodge

Montclair State University

hodgee@montclair.edu

Emily M. Hodge, Ph.D., is an assistant professor in the Department of Educational Leadership at Montclair State University. She received her PhD from the Department of Education Policy Studies at the Pennsylvania State University. Her work uses qualitative methods and social network analysis to understand the changing nature of strategies for educational equity. Recent projects have explored how educational systems, schools, and teachers negotiate the tension between standardization and differentiation in the context of the Common Core State Standards, and the varied strategies state education agencies are using to support standards implementation.

Joshua Childs

The University of Texas at Austin

joshuachilds@austin.utexas.edu

Joshua Childs is an assistant professor of Educational Policy and Planning (EPP) in the Department of Educational Leadership and Policy. Joshua received his PhD in Learning Sciences and Policy at the University of Pittsburgh. Joshua's research focuses on the role of interorganizational networks, cross-sector collaborations, and strategic alliances to address complex educational issues. Specifically, his work examines collaborative approaches involving community organizations and stakeholders that have the potential to improve academic achievement and reduce opportunity gaps for students in urban and rural schools.

Wayne Au

University of Washington, Bothell

wayneau@uw.edu

Wayne Au is an educator, activist, and scholar who focuses on issues of race, class, and power in schooling. He is a professor in the School of Educational Studies at the University of Washington-Bothell, where he currently serves as dean of diversity and equity. Au is an editor of the social justice teacher magazine *Rethinking Schools* and the author or editor of numerous other publications, including *Teaching for Black Lives*, *Rethinking Ethnic Studies*, and *A Marxist Education: Learning to Change the World*.

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