



---

School—Central Office Relationships in Evidence Use: Understanding Evidence Use as a Systems Problem

Author(s): Meredith I. Honig and Nitya Venkateswaran

Reviewed work(s):

Source: *American Journal of Education*, Vol. 118, No. 2, The Practice of Data Use (February 2012), pp. 199-222

Published by: [The University of Chicago Press](#)

Stable URL: <http://www.jstor.org/stable/10.1086/663282>

Accessed: 11/02/2012 19:32

---

Your use of the JSTOR archive indicates your acceptance of the Terms & Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



*The University of Chicago Press* is collaborating with JSTOR to digitize, preserve and extend access to *American Journal of Education*.

---

# School–Central Office Relationships in Evidence Use: Understanding Evidence Use as a Systems Problem

MEREDITH I. HONIG

*University of Washington*

NITYA VENKATESWARAN

*University of Washington*

Research on evidence use in school districts overwhelmingly focuses within schools on how school staff work with evidence including student performance data, research, and information about teaching quality. While important, this focus on schools reflects a mismatch with federal and state policies that demand not only that school staff work with evidence but that school district central office administrators do as well. This school focus also downplays how complex, social school-level change processes such as evidence use may typically involve central office staff in implementation and vice versa. To what extent do central offices matter to school-level evidence-use processes, and do schools matter to such processes in central offices? We explore these questions with a review of research on evidence use in schools and central offices with a focus on school–central office relationships in the process. We find that central offices and schools influence each other’s evidence-use processes in specific respects. We elaborate what extant research teaches about these relationships and argue that future research should aim to understand how evidence use plays out not solely within schools or central offices but across district systems and through interactions between central office and school staff.

Various federal and state policies over the past 10 years have placed significant, new demands on school systems to use data, research, and other forms of evidence to improve school performance, a process we refer to generally as “evidence-based decision making.” These demands have helped spawn a growing body of research on evidence use in education. This research for the most part has aimed to understand evidence use within schools; far fewer studies in the past decade have addressed evidence use in central offices. This focus

Electronically published December 21, 2012

*American Journal of Education* 118 (February 2012)

© 2012 by The University of Chicago. All rights reserved.

0195-6744/2012/11802-0002\$10.00

## *School–Central Office Relationships*

on school-level evidence use, while important, may misrepresent how evidence-use processes actually play out in school systems in at least three respects.

First, federal and state policies call not only on schools to engage in evidence-based decision making but on whole district systems—including schools and their central offices—to use evidence to fuel educational improvement (Honig and Coburn 2008; Means et al. 2009). Accordingly, school teachers and principals are working to make evidence-based decisions in a context in which school district central office staff are similarly looking at evidence, and sometimes the same evidence, to ground their own decisions. Second, the school focus in evidence-use research also downplays how complex, social school change processes such as evidence use typically depend on the productive engagement of central office staff to enable implementation and how they sometimes are frustrated by central office administrators' unproductive engagement (Daly and Finnigan 2010; Honig 2004). Both observations suggest that studies of evidence use that focus exclusively within schools may miss how central offices matter substantially to such processes. Third, the kinds of evidence that federal and state policies call on school district central offices to use come largely from schools. Consequently, studies that focus on how school staff members use evidence for their own decision making miss the essential ways school staff participate as the generators of key evidence for district and school-level decisions.

These observations suggest that researchers can shed important new light on these processes by viewing evidence use not as mainly a school-level challenge but as what some education reformers have called a systemic or systems problem—one that implicates both school and central office staff, and the relationships between the two. In this view, efforts to support evidence use by working solely either within schools or within central offices are likely to yield limited results. What, more specifically, are some of the ways that central

---

MEREDITH I. HONIG is an associate professor of educational leadership and policy studies at the University of Washington, Seattle, where she is also adjunct associate professor of public affairs and a partner at the Center for Educational Leadership. Her research, teaching, and district partnerships focus on leadership, policy implementation, and institutional change in urban school districts. Her recent studies use sociocultural and organizational learning theories to understand how central offices fundamentally transform themselves to support districtwide teaching and learning improvement and how district leaders use various forms of evidence to fuel the process. NITYA VENKATESWARAN is a PhD student in educational leadership and policy studies at the University of Washington. Her current research interests include using organizational and sociocultural learning theories to understand how school leaders change their professional practice.

offices matter to school-level evidence-use processes and that schools matter to evidence use in central offices? What are the implications for research on evidence use in education?

We addressed these questions by mining the research literature on school-level evidence-use processes for any mention of central offices and vice versa. With this literature as a jumping-off point, we argue that school-level evidence-use processes depend on their central offices in important respects and that, to some extent, evidence-use processes in central offices depend on schools. These dependencies in evidence-use processes provide an important anchor for future research that aims to understand relationships between schools and central offices as consequential to evidence use in school systems. We conclude with specific suggestions for how future research might shine a brighter light on these relationships.

## Background

Contemporary calls for evidence-based decision making in education have fueled a battery of research over the past 10 years or more on evidence use in school systems. These studies mainly focus within schools and aim to address how across various decisions teachers and sometimes school principals use such forms of information as student standardized test scores (Ikemoto and Marsh 2007; Lachat and Smith 2005; Supovitz and Klein 2003); information about teacher practice (Ingram et al. 2004; Wayman and Stringfield 2006); program evaluation results (Cousins et al. 2006); research-based programs (Datnow 2000); “nonperformance” indicators such as rates of disciplinary issues, dropouts, and attendance (Choppin 2002; Halverson et al. 2007); and student work (Young 2006). Not all of these forms of evidence are the same, and using them may involve different processes and produce different results. Because the research on evidence use in education does not yet make these distinctions, we consider the studies that address practitioners’ intentional engagement with such information to inform their work as a group of studies on evidence-based decision making.

These studies have yielded essential lessons about teachers’ and principals’ engagement with various forms of evidence. For one, these studies reveal that school teachers rarely use pieces of evidence one at a time or focus on a single type of evidence such as student performance data (Halverson et al. 2007; Ikemoto and Marsh 2007). Instead, evidence use typically involves practitioners juggling multiple forms of evidence simultaneously. For instance, in Ingram et al.’s (2004) study, teachers and school-level administrators used a combination of information from their experience as well as data and intuition to make decisions affecting teaching and learning (see also Supovitz and Klein

### *School–Central Office Relationships*

2003). Teachers in this study echoed those in many other studies in stressing the importance of multiple forms of evidence in their instructional decisions. These findings depart starkly from depictions of evidence use in some policy designs as involving the use of single pieces of information at a time (Honig and Coburn 2008) and from the efforts of some policy makers to focus practitioners on certain kinds of evidence to the exclusion of others. Instead, education practitioners seem to view using multiple forms of evidence simultaneously as important to strengthening their practice.

In addition, in part because practitioners are juggling multiple forms of evidence at once, evidence-use processes typically involve school staff working with their colleagues to make sense of which evidence to use, what the evidence means, and whether and how to incorporate the evidence into their own practice (Kerr et al. 2006; King 2002; Lachat and Smith 2005; Young 2006). These studies depart from some portrayals of evidence use as mainly a technical, logistical, or information management challenge of getting the right evidence into practitioners' hands or as a process that individual practitioners engage in alone. Instead, evidence-use processes are fundamentally social sense-making processes (Feldman and Tung 2001; Lachat and Smith 2005; Little 2012, this issue; Louis and Dentler 1988; Spillane 2012, this issue; Strahan 2003; Wohlstetter et al. 2008).

However, studies that look only or primarily at the process of evidence use in schools likely do not adequately reflect how evidence-use processes seem to be playing out in districts in at least three respects. These observations suggest that such studies may be limited in the extent to which they reveal the realities of evidence use in school districts. First, the research on schools seems out of step with federal and state policies that demand both schools and their central offices engage in evidence-based decision making. For example, No Child Left Behind (NCLB) requires that schools track student performance. However, NCLB also instructs school district central offices to generate and use student and school performance data to drive their own decisions in a range of areas including the design and delivery of professional development (US Department of Education 2006). The systemic scope of these demands raises important questions about how various evidence-use processes are unfolding simultaneously across school systems. For instance, what happens when school and central office staff look at the same student performance data but come to different conclusions about what those data may mean and how to take action in response? What happens when they disagree about which types of evidence are most meaningful in particular contexts?

Second, when schools engage in other kinds of complex change processes, they do not go it alone; such change processes depend substantially on their school district central offices. Studies of various initiatives including comprehensive school reform (Berends et al. 2002), school restructuring (Bryk et al.

1998), school site-based management (Malen et al. 1990), new small autonomous schools (Honig 2009), teacher professional learning communities (McLaughlin and Talbert 2003), and districtwide teaching and learning (Honig et al. 2010) show that schools' implementation of these efforts is consequentially helped or hindered by their central offices. For example, Malen et al. (1990) demonstrated how schools tended to implement school site-based management initiatives incompletely without direct support from central offices. School district central offices also support school change processes indirectly by influencing school-level conditions that mediate such processes. For example, McLaughlin and Talbert (2003) described how central office staff provided essential support for school principals in leading and ultimately enabling the implementation of teacher professional learning communities. These findings suggest that studies that focus solely within schools and not on school–central office relationships may miss important aspects of how change processes such as working with evidence actually play out in schools, let alone in school systems more broadly.

Third, schools may matter to central office evidence-use processes. For example, central office staff are supposed to use evidence that comes from schools either directly or indirectly via state data systems and other sources. Trust between central offices and schools may significantly mediate the flow of information between them in ways that may limit the type and quality of information about school practices and performance available to central office administrators (e.g., Daly and Finnigan 2010; O'Day 2002). Studies that focus on how school staff use evidence for their own decision making likely fail to capture the essential ways school staff matter to evidence-use processes in central offices.

These considerations prompted us to ask, To what extent do central offices matter to evidence-use processes in schools? To what extent do schools matter to evidence-use processes in central offices? Various organizational theories suggest that these relationships might unfold in particular ways, and each indicates that we should privilege certain aspects of those relationships. Given the nascent stage of research on central office–school relationships, we chose not to use a specific conceptual framework to ground our review. Rather we cast a broad net for mentions of central offices in school studies and vice versa and explored what kinds of relationships the extant research base suggests are most salient. With this open-ended approach, we aimed to use prior research to identify specific conceptual frameworks that might provide particularly productive anchors for future research in this area.

We also acknowledge that other relationships might be important to school and central office evidence use. For example, districts and schools together may rely on states for access to data (Massell 2001), and states may influence district definitions of what counts as student “proficiency” and school im-

## *School–Central Office Relationships*

provement in ways that shape how various forms of evidence get interpreted in districts. District central offices may depend on community engagement in data-use processes (Marsh 2007). These relationships may also vary by task. For instance, using evidence to strengthen teaching for understanding in mathematics may depend on relationships different from the use of evidence by a school site-based council to make budget decisions. Likewise, relationships may vary by role as when mathematics teachers have relationships with central office staff focused on math curriculum different from the relationships they may have with staff in the assessment office. A fuller examination of all possible relationships in evidence use is beyond the scope of any one paper. By starting with this basic exploration of district central office–school relationships, we investigate the proposition that such relationships provide an important focus for future research.

### Method

To address our research questions, we reviewed research on evidence use in schools and school district central offices. We assumed that though researchers generally have not focused directly on school–central office relationships, a review of extant research with attention to such relationships could provide useful anchors for future research.

We first looked for studies of schools by searching various databases including ERIC, JSTOR, and Google Scholar for books and articles using the broad term “school” and various terms related to evidence use (e.g., “evidence use,” “data use,” and “data-driven decision making”). We cast a broad net for studies that addressed school teachers’ and principals’ engagement with various forms of information including data, research, and lessons from their own experience. We emphasized studies conducted since 1990, given significant shifts in accountability demands on district systems starting in that decade that arguably create a particular and consequential context for evidence use in school systems especially relevant today.

This initial search surfaced 1,373 documents. Given our research questions, we eliminated studies that did not (1) somehow address the *process* of evidence use in schools (as opposed to, e.g., simply reporting whether or not teachers used evidence) and (2) at least mention the school district central office in their empirical findings. We did not include in the latter group studies that derived implications for school district central offices but did not actually empirically examine central offices in some way (i.e., either by including central office staff as respondents or by reporting how school staff or other respondents commented on their central office). Twenty-six documents met these criteria. Using these documents, we identified additional terms and authors’ names

that we used to ground additional searches. Our final set of school studies included 30 articles, book chapters, peer-reviewed conference papers, and peer-reviewed research reports.

Second, we identified studies on evidence use in central offices by starting with studies identified for an earlier systematic review (Honig and Coburn 2008) that had yielded 52 sources. We updated that review by searching ERIC and JSTOR for empirical articles published after that review. Through this process we identified an additional eight articles, four of which also addressed school-level evidence-use processes and were already in our initial subset of studies on schools. We mined these pieces for any mention of schools. We found 16 that met these criteria, including four that we already had in our set of school studies, and we included those pieces in our review.

We then read through all the studies and took detailed notes on evidence-use processes in schools and central offices with special attention to how central offices appeared in school studies and vice versa. We produced a relatively lengthy catalog of school–central office relationships in evidence use. Most of those relationships were supported by only one study. To strengthen the robustness of our analysis, for our claims about how central offices may matter to school-level evidence-use processes, we report only those findings that we could verify with at least three independent research studies. However, given the far more limited research on schools as factors in central office evidence use, we reported all findings about those relationships, even if we could verify them with only one study.

This review has two main limitations that we addressed in particular ways. First, many studies in our review suffer from methodological limitations. For instance, many studies derive their claims about evidence-use processes in schools from teachers' reports rather than from direct, independent observations or triangulation of multiple data sources to substantiate teachers' claims. Other studies employ one-time interviews that hardly capture the dynamics of evidence-use processes over time. A few studies make claims without arraying data to support those claims. Other studies describe what school or central office staff do in the context of each other's evidence-use processes and claim that those activities actually mattered to evidence-use processes without providing more rigorous substantiation of such associations. To address some of these limitations, when possible, we emphasized articles in top-tier peer-reviewed journals, assuming that the peer review promised by such journals screened for relatively more methodologically rigorous studies than other outlets. Also, in our analysis section, we describe the methods of the studies we cite to allow readers to judge for themselves the strength of our claims. We also tempered our own claims, using the literature to derive suggestions and hypotheses rather than firmer conclusions.

Second, the research on evidence use generally points out conditions that



### *School–Central Office Relationships*

may matter to evidence-use processes but not the extent to which those conditions and processes actually contribute to the ultimate goal of actually improving the quality of adult professional practice and student learning outcomes. Accordingly, in our review we do not distinguish among evidence-use processes and conditions as more or less likely to yield improvements in those areas. Instead, we home in on what research teaches about conditions that do support practitioners' engagement with evidence to whatever ends. In the concluding section, we recommend that future research aim to capture a fuller picture of the conditions, processes, and outcomes of evidence use in school systems.

### Analysis

The studies we reviewed suggest that central office and school staff may matter to evidence use at either level (i.e., school or central office, respectively) in several ways that we elaborate below. First, both central office and school staff members participate in the flow of information into evidence-use processes at either level. This information flow seems to support evidence use when it is selective (focusing practitioners on certain and potentially more useful forms of information than others) and when it occurs in the context of close social ties between central office staff and school staff (as opposed to contexts with weak or adversarial ties). Central office and school staff also may be essential participants in sense-making processes fundamental to evidence use at either level. Central office administrators may mediate evidence use in schools both directly and indirectly when they set and communicate formal expectations that school staff should engage in evidence-based decision making. Central office administrators also appear in school studies as main providers of professional development aimed at helping school staff build their capacity for using evidence. Accordingly, school-level evidence-use processes may depend on their central offices in important respects, and evidence-use processes in central offices may depend at least somewhat on schools.

### *Participating in the Flow of Information for Evidence Use*

Central office administrators appear in studies of school-level evidence use as selectively feeding information into those evidence-use processes in ways that seem to matter to school staff members' evidence use. For example, Corcoran and colleagues (Corcoran 2003; Corcoran et al. 2001) describe how central office staff hosted fairs and created other opportunities to increase teachers' and principals' knowledge of particular school improvement programs and

their underlying evidentiary base. In these districts, central offices did not maximize the flow of information to schools but rather limited the number of research-based programs schools considered. School staff reported that focusing their attention on a limited number of reform choices ultimately helped them make better decisions about school improvement approaches than they did or imagined they would without that assistance (see also Datnow 2000). Similarly, Ikemoto and Marsh (2007) drew on interviews, observations, and survey data across multiple districts and studies to show how central office language development experts worked with an intermediary organization to sort through research about instruction for English-language learners and to strategically select information and experts to share with schools that fit schools' instructional needs in this area.

Multiple research studies confirm that school staff tend not to scan for evidence themselves but rely on formally or informally designated school colleagues to make evidence available to them and that central office administrators are important supporters of those school-level information brokers. For example, in response to a national survey about their evidence-use processes, teachers generally reported that they rarely if ever used data on their own; instead other people or formal data teams helped make data accessible to them by collecting data, disaggregating them, and presenting them in forms that teachers were particularly likely to use (Means et al. 2009). Other teachers reported that they relied on one or two peers for help with accessing data, many of whom had specifically learned how to gather and analyze data to assist other teachers in this regard (Park and Datnow 2009).

Central office administrators helped such information brokering by collecting district and state assessment information and making that information available to teachers and principals, sometimes within 24 hours (Datnow et al. 2007, 2008). For example, multiple studies, mainly relying on principal and teacher reports, provide positive and negative examples of how central office staff acted as schools' main interface with state and district data systems (Gallagher et al. 2008; Kerr et al. 2006; Wayman et al. 2007; Wayman and Stringfield 2006). Other studies that corroborated such self-reports with observations (Datnow et al. 2007, 2008; Lachat and Smith 2005) revealed that central office personnel quickly provided state assessment data to teachers in ways that facilitated teachers' use of those data. These central office staff also developed data reports tailored to schools' specific requests for information (Halverson et al. 2007; see also Means et al. 2009) and performed the first rounds of data analysis for schools to use as a jumping-off point (Kerr et al. 2006).

The extent to which these information flows actually enabled evidence-use processes in schools depended in part on the nature and strength of ties between central office administrators and school staff. For instance, O'Day

### *School–Central Office Relationships*

(2002), drawing on in-depth interviews, shadowing observations, and surveys, found a steady flow of information from central offices to schools in her study districts. But she also found that schools' actual use of that information (particularly around school improvement planning) generally proceeded as "symbolic exercises in responding to formulaic requirements of the district office" (311) rather than the genuine and "thoughtful" use of evidence to inform decisions and practice. Using complexity theory as her explanatory framework, O'Day concluded that such limited, meaningful engagement in evidence-based decision making stemmed in part from the top-down control relationships between the central office and schools rather than mutual support relationships. Similarly, Daly and Finnigan (2010) substantiated in a mixed-methods study using social network analytic methods that when schools have weak ties with central office administrators, the flows of information from central offices to schools curb rather than enable schools' use of evidence and their decision making more generally. These patterns appear particularly prominent when schools are low performing and are facing challenging accountability pressures.

Research on evidence use in school district central offices barely addresses schools. However, a relatively recent subset of this research highlights how school-level information is important to central office evidence use and that access to that information depends in part on school staff and particular school–central office relationships to facilitate the flow of relevant information. For example, Wohlstetter et al. (2008), drawing on mostly one-time interviews with school and central office staff, concluded that central office evidence-use processes were enabled by "structures to encourage a strong, bottom-up information flow from school-level participants so that the central office had access to the information necessary for accurately assessing the causes of performance at each school" (248). These "structures" included central office administrators who created data systems in the central office and schools that facilitated the sharing of information between the two. One central office employed two full-time staff and teachers on special assignment who worked with schools to improve the quality of data available to other central office staff.

Likewise, Honig (2004) conducted an in-depth case study over 18 months of one school district central office involving extensive interviews and observations. Honig elaborated how designated central office administrators worked between the central office and schools to collect evidence about schools' progress with implementing particular initiatives and fed that information back into the central office to inform central office policies and practices (Honig 2003, 2006, 2009). Central office administrators' ability to gather this information depended in part on their social or political ties with staff associated with school sites; the stronger their reported and demonstrated ties, the more likely they were to access information from schools important to informing

central office support to schools (Honig 2004). Likewise, the three-district study by Honig et al. (2010) revealed how evidence from schools about the quality of their principals' leadership and teachers' instructional practice provided a vital resource for the ongoing development of their districtwide school improvement effort. The flow of information into those central office decision-making processes seemed to depend on ongoing engagement between central office administrators and schools to surface evidence about schools' experiences with central office support.

*Resources for and Assistance with Social Sense-Making Processes*

As noted above, evidence use in schools and central offices involves opportunities for school and central office staff to work with colleagues to make sense of which evidence to consider, what the evidence means, and whether and how to incorporate it into their work. Studies are beginning to reveal that central offices may provide vital resources for and assistance with those social sense-making processes within schools. School staff may help central office administrators make sense of evidence about school progress and how to use it in their decision making.

To elaborate, various studies of evidence use within schools identify time for extended dialogue about evidence and its implications for professional practice as an essential resource for the sense-making processes at the heart of evidence use. As Halverson et al. (2007) reported, on the basis of observations and interviews, teachers in four elementary schools they identified as frequently using evidence to improve their practice did so through regular meetings with colleagues. At those meetings teachers worked together to interpret the evidence and decide how specifically to incorporate it into their practice. Researchers concluded, on the basis of congruence between their data and their theoretical framework (the self-developed Data Driven Instructional System framework), that the frank discussions of practice that they observed in these settings were a far more positive and consequential influence on evidence use in these schools than other factors such as teachers' technical knowledge of techniques for data analysis (Halverson et al. 2007). At other schools, teachers met in teams frequently over three full days during the year and in 90-minute collaboration times twice a month through which they began "to cultivate a data mindset" (Young 2006, 527; see also Cousins et al. 2006; Means et al. 2009; Park and Datnow 2009).

In most of these studies, principals and teachers identified central office staff as essential to their having the extended meeting time described above (Datnow et al. 2008). For example, teachers in an urban high school reported that central office staff helped them carve out the time for biweekly data

### *School–Central Office Relationships*

discussions (Datnow et al. 2008; see also Young 2006). Prior to having such help, teachers met occasionally and somewhat unpredictably during lunch and after school, which unproductively constrained the amount of time they spent working with evidence and their ability to do so with the right colleagues.

Central office administrators also directly assisted school staff with making sense of data in several ways. Again, the research mainly relies on staff reports of the usefulness of such activities to support claims that central office administrators' activities mattered in this regard. However, given the relative frequency of this finding across studies, we claim that central office staff may assist school staffs' sense-making processes through the following strategies.

For one, central office staff developed performance goals and benchmarks that anchored how school staff made sense of evidence (Wohlstetter et al. 2008). School staff reported that before they had such measures, they sometimes struggled unproductively to understand what their performance data indicated about student performance. Some studies qualified, using teachers' survey responses, that school staff would not use those measures unless they also agreed with them or had a hand in shaping them (Means et al. 2009). In interviews, school staff credited central office administrators with not only providing such benchmarks but creating opportunities for school staff to understand and value the benchmarks such as by engaging school staff in co-constructing them (e.g., Park and Datnow 2009; Wohlstetter et al. 2008).

Second, in some schools where researchers claimed that staff regularly worked with evidence to improve teacher practice, central office staff sometimes operated as main facilitators of challenging conversations about evidence fundamental to schools' sense-making processes. For example, Halverson et al. (2007) drew on observations to reveal how central office administrators organized data retreats to help school staff address specific problems of teaching practice. Researchers chronicled how central office administrators facilitated frank conversations about teachers' practice and how teachers' participation in those discussions suggested that their engagement with evidence was prompting them to rethink their teaching. Likewise, Massell (2001) identified several districts across states where central office staff worked intensively with small groups of school staff to analyze state test results and "discuss progress over time, what it means to have students achieving at different levels, and how to interpret the outcomes" (154). In some of these systems, central office staff helped specifically with school staff members' efforts "to strengthen connections between conclusions drawn from data and school practices" (155), though they do not specify how they helped or the basis for the claims.

Third, central office administrators also supported school staffs' sense-making processes by convening them in various configurations across schools to discuss evidence of their progress. For example, Park and Datnow (2009) claimed, though with limited supporting evidence presented in the publication,

that school staff in all the school systems in their study “recognized that data-driven decision-making was enhanced when educators shared data not only within schools but across them. These interschool networks helped to strengthen connections and spread innovation across sites” (488). Others have supported these claims by showing that when school staff come together across schools, they tend to have deeper and more challenging conversations about their practice than when only their own staff participate in those discussions (Rusch 2005).

Across these studies and some others, central office administrators appeared as main conveners and facilitators of such cross-school discussions about evidence. For instance, Honig et al. (2010) demonstrated how central office administrators in three urban districts brought principals together in networks. In some of the regular network meetings, central office staff organized school principals (sometimes along with other school staff) into critical friends groups through which they jointly examined school performance data and discussed the implications for each school’s improvement strategies. These researchers used sociocultural learning theory to establish a relationship between the activities in the network meetings and principals’ engagement with evidence to shift their practice and that of their teachers (see also Honig and Rainey 2011). In another district, central office staff convened school teams vertically by feeder pattern as well as horizontally by school level. These arrangements prompted teams to look at data beyond those of their own school and to consider their implications not only for what they were doing at their own school but for how they worked together with other schools to realize common district improvement goals (Datnow et al. 2007; Park and Datnow 2009).

School staff did not facilitate sense-making processes for central office staff as the latter did for them. However, school staff may participate in central office administrators’ sense-making efforts in other ways that matter to the process. For example, various researchers have documented how some central office administrators use “Learning Walks,” “Instructional Rounds,” and other protocols for classroom observations as main strategies for gathering information about the quality of classroom instruction that they use to ground decisions about how they support schools’ instructional improvement efforts (Honig et al. 2010; Ikemoto and Marsh 2007). Such activities obviously depended on schools in the sense that schools were main settings for such evidence-collection opportunities. But school staff members also occasionally participated in those observations and subsequent discussions in ways that may have helped central office staff move beyond simply having evidence to understanding and using it to inform their decisions.

For example, in the Rand studies of evidence-use processes in several districts, central office staff participated in Learning Walks alongside school staff with whom they occasionally made collective sense of what they were seeing

### *School–Central Office Relationships*

and how to focus their improvement efforts. In one district, master teachers participated in these discussions that researchers claimed ultimately shaped the districts' efforts around improving instruction for English-language learners (Ikemoto and Marsh 2007). Similarly, in Honig's (2003, 2004) study of school-community partnership initiatives, central office staff met regularly with school site representatives. During those meetings, central office staff worked together with site representatives to make sense of sites' experiences with implementation and changes in central office policies and practices that might enable implementation. Honig used organizational learning theory to establish a relationship between those kinds of interpretation experiences and the use of school-level information by central office staff.

### *Communication of Professional Expectations for Evidence Use*

Central office administrators also may mediate evidence-use processes within schools (though not vice versa) when they communicate professional expectations for school staff to use evidence to inform their work. To be sure, the studies we reviewed suggested that school principals were main communicators about such expectations for teachers. However, various studies described how central office leaders built "a common interpretation and orientation toward data-driven decision-making," which were "mediated at the school level by formal and informal leaders" (Park and Datnow 2009, 480).

To elaborate, research on school-level evidence use frequently features school principals and teacher leaders communicating expectations that staff work ably with evidence to improve their practice. For example, in Datnow et al. (2007) and Park and Datnow (2009), principals of schools identified as frequent and able users of evidence to improve their practice communicated clearly to their teachers that data-driven decision making was fundamental to teachers' work. Those principals also integrated messages about the importance of evidence use into their school visions. These school leaders "set expectations for how meetings regarding data would be conducted. They took time to cover such issues as how to behave in meetings, what materials teachers and principals were expected to bring to meetings, what not to bring (e.g., papers to grade), and how to compile data binders. While these types of concerns seem very basic, educators indicated that these discussions helped set the tone for accountability among the staff members and ensured that meetings were purposeful" (Datnow et al. 2007, 28). Similarly, Lachat and Smith (2005) used interviews and observations to associate teachers' sustained engagement in conversations about grading and assessment data with the extent to which school leaders—including principals, teacher leaders, department chairs, and school coaches—"established and championed" data use

around clearly focused questions (345; see also Herman and Gribbons 2001; Wayman and Stringfield 2006).

Central office leaders' own communications about such professional expectations seem to foster school-level evidence use directly and also indirectly by reinforcing the expectations conveyed by school leaders about the use of evidence. In terms of direct influence, Luo (2008) revealed through structural equation modeling that central office leaders' requirements that principals use data had a significant or moderately positive direct effect on principals' data use. In other systems, superintendents and other central office leaders reported that they continuously and variously communicated the value of evidence use through their vision statements and less formal means. Researchers concluded from such reports, which they triangulated with observations and document reviews (King 2002) or multiple self-reports (Leithwood et al. 1995), that such efforts directly and positively affected evidence use in schools. In other systems identified by researchers as engaged in frequent school-level evidence use, superintendents identified data use as a "nonnegotiable" responsibility of teachers and principals (Wohlstetter et al. 2008; see also Sutherland 2004). In another system, various central office staff continuously delivered what researchers considered a clear message to school staff that they should be regularly using student performance data from a variety of sources to put together a whole picture of student achievement and not rely solely on standardized test scores. Researchers used their conceptual framework to support their claims that such communications mattered substantially to the schools' frequent use of evidence in these ways (Halverson et al. 2007). Sutherland (2004) similarly revealed how central office leaders in one school system communicated expectations to staff that working with data was an integral part of the principalship in their district by focusing a major portion of their interviews with principal candidates on evidence use. As one central office administrator described, principal candidates were "given a stack of very specific data about various schools—records and longitudinal data and we told them, 'When you come and interview with us, come prepared to question us based on what you've seen in the data.' So we kind of reversed roles instead of asking them questions with the intent to determine potential candidates' ability to use data, analyze it and then see whether they're going to look for quick fixes or if they are going to engage in the inquiry process" (284).

Such central office messages may also indirectly shape teachers' and principals' use of evidence by influencing the professional expectations for evidence use established and communicated by school principals and other school leaders as noted above. For example, in one system a superintendent framed evidence use not as a "game of gotcha" but as a critical part of school staff's efforts to examine and improve their practice (Park and Datnow 2009). Researchers observed how principals reinforced these messages in their own



### *School–Central Office Relationships*

communications within their schools (Park and Datnow 2009; Wohlstetter et al. 2008). In other schools, school leadership team members framed the analysis of student progress data, required by the central office, “not as auxiliary duties or distractions, but rather as central tools for improving instructional practices and learning” (Park and Datnow 2009, 485). Researchers concluded in part on the basis of the consistency of the messages from the central office and school leaders that these communications reinforced each other and together likely contributed to school-level evidence use.

Principals do not simply pass central office expectations on to staff; rather principals seem to play important roles as translators of central office communications about evidence use in ways that may strengthen the impact of those messages on school-level evidence use. For instance, three studies that triangulated data across interviews and observations reported that when teachers perceived messages from central office leaders to use evidence as a directive and were unclear on the benefits of using evidence, teachers were not especially likely to increase their engagement in evidence-based decision making (Halverson et al. 2007; Park and Datnow 2009; Young 2006). As one principal described, “You can’t just walk around and say to teachers, ‘You must do this’. . . [b]ecause they have to have that buy-in of understanding. And I think it’s my job to make sure that I facilitate it” (Park and Datnow 2009, 485). Datnow et al. (2008) made similar claims based on interviews that at the school level “people get turned off unless they really understand concretely what it is they’re being asked to do with data, and how it’s going to have an impact on their classes in the next couple of weeks” (31).

In other schools where staff claimed they routinely used evidence to inform their practice, principals repackaged the central office mandates in particular ways. Specifically, those principals repeatedly articulated the rationale for expectations that teachers work with data and other evidence. The principals also framed the use of data as integral aspects of teachers’ work and as low-risk and potentially high-value professional practices. Along these lines, one teacher commented that her principal “offered opportunities that if you struggle, here’s your safety net. If you’ve failed, try again. You know she’s done it in a very non-judgmental way and let people get to their levels” (Datnow et al. 2008, 30).

### *Provision of Professional Development for Evidence Use in Schools*

Studies of school-level evidence use also suggest that professional supports are essential to such evidence-use processes, particularly the availability of people on site to model and otherwise build people’s capacity for working with evidence to improve their practice. Principals and teacher leaders appear as main

agents of such professional development, but in many cases they seem to rely on central office staff to help them build their capacity for such work.

For example, in one school where teachers frequently worked with data to improve their own practice, the principal held “learning sessions” rather than staff meetings. During the sessions the principal consistently modeled data use “by providing teachers with feedback from her informal classroom observations, substantiating instructional strategies with the research behind them, and presenting data . . . to frame a particular problem, such as the disproportionate number of disciplinary referrals for African-American boys” (Young 2006, 533). On the basis of an analysis of limited interviews at four schools, Cousins et al. (2006) likewise concluded that school staff interest in and commitment to working with data hinged substantially on the extent to which school leaders not only embraced and valued that work but also modeled the use of data and, in the process, provided “concrete examples” of how teachers could use data (172).

Central office staff members seem to help principals and teacher leaders build their capacity for providing such assistance (Halverson et al. 2007; Park and Datnow 2009). For example, site leadership teams in Park and Datnow (2009) received training from central office administrators on how to analyze state test results and in turn trained the rest of the school staff using modeling and other techniques. District staff in other systems convened district data retreats that provided school principals, teachers, and others with the opportunity to “dig into” data and “have their own conversations. We [central office staff] may ask leading questions, [but] we want them to have the ‘ah-ha!’ themselves” (Halverson et al. 2007, 171).

Other district leaders modeled the use of data in their own work to help principals and other school staff to see concrete examples of evidence use in practice (Anderson et al. 2010). Honig et al. (2010) used sociocultural learning theory to establish an association between central office staffs’ efforts to model for principals how to use evidence to scrutinize teaching practice and principals’ actual use of that evidence to inform their work with teachers. This study and Young’s (2006) analysis suggest that such models may be particularly powerful, positive influences on school-level evidence use when central office administrators not only demonstrated evidence-based practice but also explicitly articulated what they were modeling and why.

## Conclusions and Implications

In sum, most studies we reviewed did not shine a direct light on school–central office relationships in evidence-use processes (for exceptions, see Daly and Finnigan [2010], Datnow et al. [2007], Park and Datnow [2009], and Wohl-

### *School–Central Office Relationships*

stetter et al. [2008]). However, we found that research still suggests that central office staff matter to school-level evidence use, and to some extent school staff are important participants in central office evidence-use processes. Central office staff support school-level evidence use when they (1) participate in the flow of information to school staff, especially when they focus school staffs' attention on particular information and in contexts with close ties between central office and school staff; (2) assist with school staffs' sense-making processes by helping school staff set aside the time such processes require, providing and engaging school staff in performance goals and benchmarks to anchor their sense-making processes, directly facilitating challenging conversations about data, and convening staff across schools for such conversations; (3) create and communicate professional expectations that school staff use evidence; and (4) provide school staff with professional development for evidence use, especially modeling. Evidence use in central offices may depend on school staff to participate in the flow of information to central offices and in critical conversations with central office staff that help them interpret school-level evidence and otherwise make sense of what actions they might take in response. Especially since these findings were essentially a by-product of either school- or central office-focused studies, the fact that we were still able to discern them lends support for the conclusion that these relationships matter to evidence use in school systems. Such findings also support the argument that future research would do well to focus on better understanding such relationships.

This review, by its inclusions and omissions, raises several questions and offers particular answers to guide future research. Among them, what conceptual frameworks might productively ground research on evidence use with school–central office relationships as the main unit of analysis? Some of the studies we highlighted here relied on particular theories to elaborate the nature of these relationships. For instance, Wohlstetter et al. (2008) used principal-agent theory to reveal how information asymmetry between central offices and schools and schools' autonomy helped define and explain those relationships. Daly and Finnigan (2010) used social capital theory to show how social ties between central office and school staff largely determine the flow of information between the two and, in their case, constraints on school-level decision making. Honig's research (e.g., 2003, 2009; Honig et al. 2010) uses organizational learning and sociocultural learning theories to suggest that learning relationships between central offices and schools are important to evidence-use processes in district systems.

Our review revealed that central offices and schools might be dependent on one another for particular resources to enable their use of evidence, suggesting that theories of resource dependence might shine important light on such phenomena (e.g., Pfeffer and Salancik 1978). The application of resource-

dependence theory to the results of this review might suggest that dependence between central office and schools may be asymmetrical—with schools more dependent on central offices than vice versa—which may help or hinder evidence use. For instance, if schools are more dependent on central offices than central offices are on schools, schools may not have adequate autonomy to make evidence-based decisions. However, using this theory at the point of data collection might reveal that central office staff are actually far more dependent on schools than the extant literature suggests. Future research could explore such questions by employing such theoretical frameworks for data collection and analysis.

As researchers select theories as the basis for such frameworks, they would also do well to highlight those theories that may reveal how central office–school relationships play out differently in the context of particular decisions or tasks and types of evidence. For instance, decisions about instructional matters as one kind of task may be helped or hindered by different relationships than certain budget decisions. Using school performance data as one type of evidence may be mediated by different relationships than using evidence about the quality of teaching practice. How do relationships between central offices and schools vary by task and evidence type, and with what results?

In the process, future research on such relationships would do well to better conceptualize more basic dimensions of evidence-use processes that are generally neglected in the extant research. For instance, the literature we reviewed often did not adequately specify what it means to use evidence. Some studies posit that practitioners are using evidence when they engage with it (e.g., read it, discuss it with colleagues, consider its implications for their practice) whether or not they actually actively try to incorporate the evidence into how they work. But such engagement likely involves different processes and relationships and has different results than incorporation. This hypothesis is supported by various research traditions. For example, organizational learning theory distinguishes exploration or engagement processes from exploitation or incorporation processes and shows how they involve different activities, capacities, and relationships to risk (Levitt and March 1988). How then do central office–school relationships matter differently when it comes to searching for and considering evidence versus actively trying to use evidence to shift practice?

A focus on systems relationships in evidence use should also prompt researchers to consider which systems and system subunits and interactions among them matter to evidence use. Given the policy demands with which we began this article and the nascent stage of research on any school system relationships in evidence use, we focused our review a priori and bluntly on schools and their central office as the main relevant units of district systems that might interact consequentially during evidence-use processes. But many of the theories we suggest as conceptual frameworks would advise exploring

### *School–Central Office Relationships*

which subunits matter most to evidence-use processes as an empirical question. For example, some evidence-use processes may depend on certain central office or school staff more than others. State or county departments of education or community organizations may be key players in evidence use in practice but relatively invisible in the extant research.

Similarly, all contemporary organizational theories acknowledge that system subunits operate in “environments” that mediate how central offices and schools or other system subunits relate to each other. Environments, from many political science perspectives, can include other levels of government such as state educational agencies and the US Department of Education or third-party actors and organizations. For instance, in our review we uncovered but did not report on a growing body of evidence that highlights intermediary organizations such as nonprofit school reform support providers and universities as assisting with evidence use mainly in schools but also increasingly in central offices. Environments may also include what some sociologists, cultural theorists, and others refer to as institutional or sociocultural environments. With these terms, researchers mean that professional and other kinds of norms (including meanings and logics, conceptions of legitimate behavior) and legal requirements may shape how actors use various kinds of information in ways particularly influenced by their pursuit of legitimacy. A fuller treatment of evidence use as a systems challenge would uncover empirically which environments are more or less important to the use of certain kinds of evidence in the context of different use processes and tasks. Such research would also aim to understand when a particular part of a district system is a subunit or part of the environment and the extent to which that distinction matters. For instance, some school studies treat the central office as a subunit of the district system while others view it as part of schools’ external environment. Does this distinction between subunit versus environment matter, and if so, how?

Taking central office–school relationships and other possibly relevant relationships as main units of analysis will also require methods appropriate to that focus. Such methods might include complex quantitative modeling or real-time observations and in-depth interviews that probe inter- and intra-organizational dynamics as they unfold over time. These methods very seldom appeared in the research we reviewed. In particular, because evidence-based decision making unfolds over time as do central office–school relationships, longitudinal analysis likely would add greatly to the knowledge base about these processes and relationships.

A more intentional focus on such relationships might also generate findings relevant to a question with which we began this review but found hardly addressed in the research we reviewed: What happens when schools and central offices are both working with evidence to make decisions, especially when they may be working with the same evidence but coming to different

conclusions? Likewise, what happens when different practitioners disagree about which evidence is of value, as in the Rand studies (e.g., Ikemoto and Marsh 2007; Marsh et al. 2005) that reported teachers did not find evidence from classroom observations as useful as did central office staff? People's views on such matters may conflict not only between schools and the central office but among various actors across the system, especially in larger systems when many people are taking up the charge to work with evidence. When conflicts arise, who ultimately decides? Do conflicts get resolved, and if so, how? Some studies in our review suggested that districts that work productively with evidence establish a division of labor between at least central offices and schools (Halverson et al. 2007; Park and Datnow 2009). What, more specifically, does a productive division of labor look like? What are other strategies for encouraging and managing evidence-use processes throughout district systems? Exploring such dynamics might provide a particularly practice-relevant direction for future research.

Ultimately, evidence-use processes matter to the extent that they actually support improvements in the quality of classroom teaching and student learning. How can researchers not only more fully uncover the systems dynamics of evidence-use processes but generate knowledge about the systems dynamics that may be more or less consequential to student learning outcomes?

## References

- Anderson, Stephen, Kenneth Leithwood, and Tiiu Strauss. 2010. "Leading Data Use in Schools: Organizational Conditions and Practices at the School and District Levels." *Leadership and Policy in Schools* 9 (3): 292–327.
- Berends, Mark, Susan Bodilly, and Sheila N. Kirby. 2002. "Looking Back over a Decade of Whole-School Reform: The Experience of New American Schools." *Phi Delta Kappan* 84 (2): 168–75.
- Bryk, Anthony, Penny B. Sebring, David Kerbow, Sharon Rollow, and John Q. Easton. 1998. *Charting Chicago School Reform: Democratic Localism as a Lever for Change*. Boulder, CO: Westview.
- Choppin, Jeffrey. 2002. "Data Use in Practice: Examples from the School Level." Paper presented at the annual meeting of the American Educational Research Association, New Orleans, April.
- Corcoran, T. 2003. *The Use of Research Evidence in Instructional Improvement*. Philadelphia: Consortium for Policy Research in Education.
- Corcoran, Tom, Susan H. Fuhrman, and Catherine L. Belcher. 2001. "The District Role in Instructional Improvement." *Phi Delta Kappan* 83 (1): 78–84.
- Cousins, J. Bradley, Swee C. Goh, and Shannon Clark. 2006. "Data Use Leads to Data Valuing: Evaluative Inquiry for School Decision Making." *Leadership and Policy in Schools* 5 (2): 155–76.
- Daly, Alan, and Kara Finnigan. 2010. "A Bridge between Worlds: Understanding Network Structure to Understand Change Strategy." *Journal of Educational Change* 11 (2): 111–38.

## *School–Central Office Relationships*

- Datnow, Amanda. 2000. "Power and Politics in the Adoption of School Reform Models." *Educational Evaluation and Policy Analysis* 22 (4): 357–74.
- Datnow, Amanda, Vicki Park, and Brianna Kennedy. 2008. "Acting on Data: How Urban High Schools Use Data to Improve Instruction." Unpublished manuscript, Center on Educational Governance, Rossier School of Education, University of Southern California, Los Angeles.
- Datnow, Amanda, Vicki Park, and Priscilla Wohlstetter. 2007. "Achieving with Data: How High-Performing School Systems Use Data to Improve Instruction for Elementary Students." Unpublished manuscript, Center on Educational Governance, Rossier School of Education, University of Southern California, Los Angeles.
- Feldman, Jay, and Rosann Tung. 2001. "Using Data-Based Inquiry and Decision Making to Improve Instruction." *ERS Spectrum* 19 (3): 10–19.
- Gallagher, Lawrence, Barbara Means, and Christine Padilla. 2008. "Teachers' Use of Student Data Systems to Improve Instruction: 2005 to 2007." Report. Washington, DC: US Department of Education.
- Halverson, Richard, Jeffrey Grigg, Reid Pritchett, and Chris Thomas. 2007. "The New Instructional Leadership: Creating Data Driven Instructional Systems in Schools." *Journal of School Leadership* 17 (2): 159–94.
- Herman, Joan L., and Barry Gribbons. 2001. "Lessons Learned in Using Data to Support School Inquiry and Continuous Improvement: Final Report to the Stuart Foundation." Report, Center for the Study of Evaluation, University of California, Los Angeles.
- Honig, Meredith I. 2003. "Building Policy from Practice: District Central Office Administrators' Roles and Capacity for Implementing Collaborative Education Policy." *Educational Administration Quarterly* 39 (3): 292–338.
- Honig, Meredith I. 2004. "Where's the 'Up' in Bottom-Up Reform?" *Educational Policy* 18 (4): 527–61.
- Honig, Meredith I. 2006. "Street-Level Bureaucracy Revisited: Frontline District Central-Office Administrators as Boundary Spanners in Education Policy Implementation." *Educational Evaluation and Policy Analysis* 28 (4): 357–83.
- Honig, Meredith I. 2009. "No Small Thing: School District Central Office Bureaucracies and the Implementation of New Small Autonomous Schools Initiatives." *American Educational Research Journal* 46 (2): 387–422.
- Honig, Meredith I., and Cynthia Coburn. 2008. "Evidence-Based Decision Making in School District Central Offices: Toward a Policy and Research Agenda." *Educational Policy* 22 (4): 578–608.
- Honig, Meredith I., Michael A. Copland, Lydia Rainey, Juli Lorton, and Morena Newton. 2010. "Central Office Transformation District-Wide Teaching and Learning Improvement." Center for Teaching and Policy, University of Washington, Seattle.
- Honig, Meredith I., and Lydia R. Rainey. 2011. "Autonomy and School Improvement: What Do We Know and Where Do We Go from Here?" *Educational Policy*, electronically published October 17, DOI: 10.1177/0895904811417590.
- Ikemoto, Gina Schuyler, and Julie A. Marsh. 2007. "Cutting through the 'Data-Driven' Mantra: Different Conceptions of Data-Driven Decision Making." *Evidence and Decision Making: Yearbook of the National Society for the Study of Education* 106 (1): 105–31.
- Ingram, Debra, Karen Seashore Louis, and Roger Schroeder. 2004. "Accountability Policies and Teacher Decision Making: Barriers to the Use of Data to Improve Practice." *Teachers College Record* 106 (6): 1258–87.
- Kerr, Kerri A., Julie A. Marsh, Gina Schuyler Ikemoto, Hilary Darilek, and Heather Barney. 2006. "Strategies to Promote Data Use for Instructional Improvement:

- Actions, Outcomes, and Lessons from Three Urban Districts.” *American Journal of Education* 112 (4): 496–520.
- King, M. Bruce. 2002. “Professional Development to Promote Schoolwide Inquiry.” *Teaching and Teacher Education* 18 (3): 243–57.
- Lachat, Mary Ann, and Stephen Smith. 2005. “Practices That Support Data Use in Urban High Schools.” *Journal of Education for Students Placed at Risk* 10 (3): 333–49.
- Leithwood, Kenneth, Doris Jantzi, and Rosanne Steinbach. 1995. “An Organisational Learning Perspective on School Responses to Central Policy Initiatives.” *School Organisation* 15 (3): 229–52.
- Levitt, Barbara, and James G. March. 1988. “Organizational Learning.” *Annual Review of Sociology* 14:319–40.
- Little, Judith Warren. 2012. “Understanding Data Use Practice among Teachers: The Contribution of Micro-Process Studies.” *American Journal of Education* 118 (2): 143–66.
- Louis, Karen Seashore, and Robert A. Dentler. 1988. “Knowledge Use and School Improvement.” *Curriculum Inquiry* 18 (1): 33–62.
- Luo, Mingchu. 2008. “Structural Equation Modeling for High School Principals’ Data-Driven Decision Making: An Analysis of Information Use Environments.” *Educational Administration Quarterly* 44 (5): 603–34.
- Malen, Betty, Rodney T. Ogawa, and Jennifer Kranz. 1990. “What Do We Know about School-Based Management? A Case Study of the Literature—a Call for Research.” In *Choice and Control in American Education*, vol. 2, *The Practice of Choice, Decentralization and School Restructuring*, ed. William H. Clune and John F. Witte. New York: Falmer.
- Marsh, Julie A. 2007. *Democratic Dilemmas: Joint Work, Education Politics and Community*. Albany: State University of New York Press.
- Marsh, Julie A., Kerri Kerr, Gina Schuyler Ikemoto, Hilary Darilek, Marika Suttorp, Ron Zimmer, and Heather Barney. 2005. *The Role of Districts in Fostering Instructional Improvement: Lessons from Three Urban Districts Partnered with the Institute for Learning*. Washington, DC: Rand Corporation.
- Massell, Diane. 2001. “The Theory and Practice of Using Data to Build Capacity: State and Local Strategies and Their Effects.” In *From the Capitol to the Classroom: Standards-Based Reform in the States*, 100th Yearbook of the National Society for the Study of Education, ed. S. H. Fuhrman. Chicago: National Society for the Study of Education.
- McLaughlin, Milbrey, and Joan Talbert. 2003. *Reforming Districts: How Districts Support School Reform; a Research Report*. Document R-03-6. Seattle: Center for the Study of Teaching and Policy.
- Means, Barbara, Christine Padilla, Angela DeBarger, and Marianne Bakia. 2009. “Implementing Data-Informed Decision Making in Schools: Teacher Access, Supports and Use.” Report. Washington, DC: US Department of Education.
- O’Day, Jennifer. 2002. “Complexity, Accountability, and School Improvement.” *Harvard Educational Review* 72 (3): 293–329.
- Park, Vicki, and Amanda Datnow. 2009. “Co-constructing Distributed Leadership: District and School Connections in Data-Driven Decision-Making.” *School Leadership and Management* 29 (5): 477–94.
- Pfeffer, Jeffrey, and Gerald R. Salancik. 1978. *The External Control of Organizations*. New York: Harper & Row.
- Rusch, Edith A. 2005. “Institutional Barriers to Organizational Learning in School Systems: The Power of Silence.” *Educational Administration Quarterly* 41 (1): 83–120.



### *School–Central Office Relationships*

- Spillane, James. 2012. "Data in Practice: Conceptualizing the Data-Based Decision-Making Phenomena." *American Journal of Education* 118 (2): 113–41.
- Strahan, David. 2003. "Promoting a Collaborative Professional Culture in Three Elementary Schools That Have Beaten the Odds." *Elementary School Journal* 104 (2): 127–46.
- Supovitz, Jonathon, and Valerie Klein. 2003. "Mapping a Course for Improved Student Learning: How Innovative Schools Systematically Use Student Performance Data to Guide Improvement." Unpublished manuscript, Consortium for Policy Research in Education, Philadelphia.
- Sutherland, Stephanie. 2004. "Creating a Culture of Data Use for Continuous Improvement: A Case Study of an Edison Project School." *American Journal of Evaluation* 25 (3): 277–93.
- US Department of Education. 2006. *LEA and School Improvement: Non-regulatory Guidance*, <http://www.ed.gov/policy/elsec/guid/schoolimprovementguid.pdf>.
- Wayman, J. C., Vincent Cho, and Mary T. Johnston. 2007. "The Data-Informed District: A District-Wide Evaluation of Data Use in the Natrona County School District." Unpublished manuscript, University of Texas, Austin.
- Wayman, Jeffrey, and Sam Stringfield. 2006. "Technology, Supported Involvement of Entire Faculties in Examination of Student Data for Instructional Improvement." *American Journal of Education* 112 (4): 549–71.
- Wohlstetter, Priscilla, Amanda Datnow, and Vicki Park. 2008. "Creating a System for Data-Driven Decision-Making: Applying the Principal-Agent Framework." *School Effectiveness and School Improvement* 19 (3): 239–59.
- Young, Viki M. 2006. "Teachers' Use of Data: Loose Coupling, Agenda Setting, and Team Norms." *American Journal of Education* 112 (4): 521–48.