Learning in Low-Performing School Districts: Conceptual and Methodological Challenges Resulting from Network Churn

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Abstract: Turning around low-performing schools and districts has become a primary focus of educational policy across the country as a result of state and federal accountability policies implemented over the last decade. Our study uses theories of organizational learning and social network analysis to examine the structure and types of 'ties,' or relationships, among educators across an entire low-performing district. Our paper uncovers critical aspects of the context, some of which are directly related to the accountability policies that are meant to bring about improvement, which limit 'learning' in these schools and districtwide. Our study has important implications for both the understanding of learning processes in districtwide improvement, as well as methodological strategies for examining these.

Focus and Significance

A national push for higher levels of performance and accountability through federal policies and programs has increased the pressure on the schools and districts in the most challenging circumstances. Recent federal policies like NCLB and Race to the Top rely heavily on local school districts and their low-performing schools to engage in reform efforts to bring about improvement. However, most schools have struggled rather than improved. U.S. Secretary of Education Arne Duncan brought attention to this in his testimony to Congress when he noted that NCLB, "has created a thousand ways for schools to fail and very few ways to help them succeed" (Duncan, 2011).

Improving underperforming schools is challenging work that requires close attention to internal conditions in these schools, including the social relationships that facilitate improvement. Underperforming schools tend to be turbulent organizations with high staff turnover, multiple and changing reforms, and challenges related to leadership (Daly, 2009; Daly & Finnigan, 2011, 2012; Finnigan, 2010, 2012; Finnigan & Stewart, 2009), teacher quality (Sunderman, Kim & Orfield, 2005), and teacher motivation (Finnigan & Gross, 2007). Research in other fields has found that system-wide improvement is closely linked to the quality and structure of organizational relationships (McGrath & Krackhardt, 2003; Tenkasi & Chesmore, 2003) with frequent interactions supporting the transfer of tacit, non-routine, and complex knowledge, thereby allowing for collaborative problem solving and systemic change (Hansen, 1999; Reagans & McEvily, 2003; Uzzi, 1997). Within the field of education, research has found that schools with collaborative or trusting cultures are more likely to show signs of improvement and innovation (Bryk & Schneider, 2002; Mintrop, 2004; Mintrop & Trujillo, 2005; Moolenaar, 2010; O'Day, 2004). Beyond the importance of internal processes and relationships, much recent literature has found that greater attention must be paid to the larger district in which low-performing schools reside given the key role of the central office and the importance of a systemwide approach to improvement (Burch & Spillane, 2004; Datnow & Castellano, 2003; Honig 2006; Marsh et al, 2005; Smylie, Wenzel, & Fendt, 2003).

Building upon this prior work, drawing on the theoretical lens of organizational learning, and utilizing the methodological approach of social network analysis, our exploratory study examines schools and their larger district context as they attempt to improve under accountability policy sanctions. We sought to answer the following questions: What are the structure of relationships for leaders in low-performing districts and do these change over time? What are the structure of relationships within low-performing schools and how do these facilitate or hinder learning? To what extent do leaders in low-performing districts have the cross-sector connectedness and reciprocal ties necessary for large-scale learning and improvement?

Our study makes a unique contribution to the research because it involves longitudinal network data of leaders in low-performing districts. In addition, it focuses specifically on the relationships among and between both school and central office leaders to understand the district as a larger organizational unit. Finally, the paper examines the structure and types of relationships necessary for organizational learning. In our prior work we focus on specific aspects of organizational learning processes; here, instead, we pull together theories of social networks and organizational learning to examine not only the existence and types of relationships of educational leaders, but also how these change over time, to understand organizational learning and improvement in low-performing districts.

Theoretical Framework

Organizational Learning

Learning in education is often used to describe the process through which individual students gain knowledge or skills in school settings. However, 'learning' is also important at the school and district organizational levels, particularly in the context of reform. As schools and districts, "continue to face a steady stream of novel problems and ambitious demands" (Leithwood, Jantzi, & Steinbach, 1995, pp. 3-4), a deeper understanding of learning process in schools and districts that are under tremendous pressure to perform may be useful especially given the growing numbers of these systems. Our research builds upon the work of organizational learning theorists (see, for example, Argyris & Schön, 1996; Huber, 1991; Levitt & March, 1988; March, 1991) in better understanding these processes.

Organizational learning is the process of detecting and correcting problems to improve organizational effectiveness (Argyris & Schön, 1996). The process of accurately diagnosing the underlying issues facing an organization is one of the first and most crucial steps in an organizations ability to 'learn' and improve (Argyris & Schön, 1996; Collinson & Cook, 2007). This suggests that the process of organizational learning involves understanding the important elements of practice, as well developing the underlying beliefs that support practice. Learning in an organizational sense leads members to change both behaviors (Levitt & March, 1988) and norms (Collinson & Cook, 2007) through a deliberate, rather than haphazard, process (Fiol & Lyles, 1985). Recent research suggests that this learning orientation toward reform and change can have significant impact on improving organizational performance (Hubbard, Mehan & Stein, 2006; Knapp, 2008). However, this work is still very much in its infancy.

Learning involves refining theories through "single loop" learning or through "double loop" learning, which requires a more careful examination of underlying assumptions, values, and beliefs that result in the emergence of new Theories in Use. Single-loop learning is conceptualized as learning that remains within the current organizational paradigm. In other words, "how best to achieve existing goals and objectives and how to keep organizational performance *within the range specified by existing norms* [emphasis added]" (Argyris & Schön, 1978, p. 21). Double-loop learning involves examining, "incompatible organizational norms by setting new priorities and weightings of norms, or by restructuring the norms themselves together with associated strategies and assumptions" (Argyris & Schön, 1978, p. 24). This type of learning requires examination of underlying values or assumptions that at one time may have been supportive of organizational goals, but now inhibit the organization's ability to learn. A key distinction is that single loop learning refers to incremental or routine changes, while double loop learning refers to transformational or more radical change and innovation (Easterby-Smith, Crossan, & Nicolini, 2000).

While the level of learning has been a long-standing debate in the literature, many theorists believe that organizational learning is more than just the sum of individual learning and results in institutional memory at the organizational level (Easterby-Smith, Crossan, & Nicolini, 2000, p. 785). As Stoll (2009) points out, learning processes involve dialogue, allowing members of the community to connect, discuss, and debate. In essence, organizational learning is "embedded in the deeply held beliefs and shared conceptualizations that develop among members of the organization over time as particular understandings and practices evolve through unconscious and regular interactions" (Supovitz, 2009, p. 709). Organizational learning, thus, involves social activities or the social processing of knowledge (Bransford et al, 2009; Hubbard, Mehan, & Stein, 2006; Marks & Louis, 1999), as individuals within the organization develop and share new knowledge and tools that results in commonly held ideas or practices or collective learning.

A final important aspect of organizational learning relates to the way in which ideas or practices enter the organization or evolve. March (1991) argues that organizations require a balance between exploration (exploration of new knowledge or experimentation) and exploitation (refinement or utilization of existing knowledge). Furthermore, double loop learning would suggest that some degree of exploration (or search for new ideas and practices outside of the organization) occurs as the organization moves beyond current norms and practices. Building upon the work of Levitt and March (1988), Honig (2008) expands upon these ideas, arguing that the search or exploration process may involve scanning the external environment for ideas or bringing individuals with expertise into the organization. In fact, this flow of information into and throughout the organization is critical to organizational learning (Huber, 1991). Organizational actors 'incorporate' these ideas or approaches into practice, either formally or informally, and through a 'retrieval' process adopt these practices over time when faced with new situations.

Social Networks and Social Capital

As Lin (2001) points out, the common denominator across theories of social capital is the understanding that it consists of, "The resources embedded in social relations and social structure which can be mobilized when an actor wishes to increase the likelihood of success in purposive action" (p. 24). Social capital is concerned with the resources that exist in social relations (referred to as 'ties') between individuals as opposed to the resources

of a specific individual. It is the structure and quality of those ties that ultimately determines opportunities for social capital transactions and access to resources (Burt, 1992; Granovetter, 1973, 1982; Lin, 2001; Putnam, 1993, 1995). Two aspects of social capital, networks and trust, frequently appear in the social capital literature (e.g., Bourdieu 1986; Halpern 2005; Nahapiet & Ghoshal, 1998).

The first element, networks, is primarily focused on how an actor is embedded in social relations, which forms a patterned structure of relationships (Nahapiet & Ghoshal 1998). In a social network, individuals are embedded within relationships, and these relationships are embedded in larger subgroups that eventually form a social network. The role of networks has been implicated as both supports and constraints in the process of organizational change, learning, and improvement (Balkundi & Kilduff, 2005; Bartol & Zhang, 2007; Leana & Van Buren 1999; Mehra et al., 2006; Penuel et al., 2009; Weinbaum Cole, Weiss, & Supovitz, 2008). This literature suggests that the structure of social networks can support organizational goals by facilitating the flow of information between individuals and overcoming problems of coordination (Lazega & Pattison, 2001; Tsai & Ghoshal, 1998). Many scholars have identified densely connected networks as a critical source of organizational advantage (e.g., Adler & Kwon, 2002; Leana & Van Buren, 1999; Nahapiet & Ghoshal, 1998; Walker et al., 1997), as those social interactions provide opportunities to build trust and as such significantly add to an organization's ability to innovate through supporting risk tolerant climates (Tsai & Ghoshal, 1998).

The second element, trust, has been identified as one of the most important affective norms characterizing a community (Nahapiet & Ghoshal, 1998). Trust is based on interpersonal interdependence (Rousseau, Sitkin, Burt, & Camerer, 1998) and involves an individual's or group's willingness to be vulnerable to another party based on the confidence that the latter party is benevolent, reliable, competent, honest and open (Cummings & Bromiley, 1996; Hoy & Tschannen-Moran, 2003). Trust, as a social capital resource, has been associated with cooperation (Hoy & Tschannen-Moran, 2003) and group cohesiveness (Zand, 1997). High levels of trust have also been associated with a variety of efforts that require collaboration, learning, complex information sharing and problem solving, shared decision-making, and coordinated action (Bryk & Schnieder, 2002; Cosner, 2009; Tschannen-Moran, 2004; Tschannen-Moran & Hoy, 2000; Lin, 2001). Bryk and Schneider (2002) suggest that trust is especially important for organizations that operate in turbulent environments, which is certainly the case in underperforming urban schools and districts. In essence, a predictability of relations gained through reciprocal interactions decreases the vulnerability between individuals as well as potentially increases the depth of exchange due to a willingness to engage in risk taking (Larson, 1992; Uzzi, 1997). In support of this claim, research suggests reciprocal as opposed to asymmetric relations provide mutual benefit to the relationship in effect creating a reinforcing effect (Lin, 2001). Reciprocated relations are, therefore, important in providing opportunities to build and deepen the norms of trust necessary for the exchange of reform related resources. Reciprocated relations provide opportunities for individuals to interact and learn together, which is important in educational systems oriented toward learning (Honig, 2008; Lave & Wenger, 1991; Wenger, 1998).

Through these two theoretical lenses, our study seeks to examine the ways in which underlying social networks of leaders facilitate or hinder organizational learning processes. It is the interaction between the activities and conditions of learning that that provide both a lens and process for organizational renewal, opportunities for learning, and better outcomes.

Methods and Data Sources

The study involves case study design (Yin, 2003) focusing on one urban district, which is a district 'in need of improvement' under NCLB, serving approximately 32,000 students. The district is 90 percent nonwhite, with 88 percent of students receiving free and reduced price lunches. Within the district, nearly all of the high schools and many elementary schools are identified as 'underperforming' based on state and federal accountability guidelines. We also include embedded cases of two high schools within this district. This district is an important case as it typifies many of the urban districts across the country that serve primarily students of color from low socio-economic communities, have a pattern of underperformance, and are engaged in district-wide improvement efforts to move off of sanctions.

The quantitative data collection occurred between 2010 and 2013 and involved a survey instrument administered to both school and district staff with both fixed-response items relating to organizational climate and technical aspects of organizational learning, as well as social network items. The organizational learning and climate items were developed based upon our theoretical framework, as well as incorporated items used in other contexts that were adapted to the school and district setting (see, for example, Garvin, Edmondson, and Gino, 2008) or used in schools (e.g., Tschannen-Moran and Hoy's (2000) trust scale. For example, our instrument involved questions relating to technical aspects of organizational learning, e.g., single/double loop learning and exploration/exploitation, as well as to the overall climate of the school. In addition, the survey instrument involved social network questions based upon prior network studies (Cross & Parker, 2004; Cross, Borgatti & Parker, 2002; Hite Williams, & Baugh, 2005) and targeted both instrumental (expertise) and expressive (vent) relationships. Respondents were asked to quantitatively assess a particular relationship with

each individual on a 4-point frequency scale ranging from 0 (not at all) to 4 (1-2 times a week). For example, regarding expertise ties respondents were asked the following: "*Please select the frequency of interaction for each school/district staff who you consider a reliable source of expertise related to your work*." The vent network was created based on the prompt, "*Please select the frequency of interaction with members of the school/district who you turn to when you need to vent*."

Each year, we administered the survey to the district's leadership team, which included 181 individuals over the 4-year period. We surveyed those in formal leadership positions in the district, including the Superintendent, Chiefs and Directors from the central office and principals at the school sites. During a three-year period we also collected data within two high schools that we use in this paper, surveying all educators in these schools including classroom and non-classroom staff. For both the school and district leadership team online surveys we used a bounded/saturated approach (Lin, 1999; Scott, 2000), meaning we listed all members of the particular group (school or leadership team) and respondents were not able to list any "outside" people that they connected to for example, teachers from other schools or clerical staff. The benefit of using this strategy is that it, coupled with high response rates, provides a more complete picture and more valid results compared with an unbounded approach (Lin, 1999; Scott, 2000). Response rates for the school and district level surveys range from 80 to 88%, thereby meeting the threshold for social network analysis (Scott, 2000).

We used SPSS to conduct the analysis of the survey items that related to organizational learning and climate and used UCINET software (Borgatti, Everett & Freeman, 2002), including Netdraw (Borgatti, 2002), for the social network analyses. Given that respondents tend to be more accurate at identifying ongoing patterns than determining occasional interactions (Carley & Krackhardt, 1999) and that we were interested in stable structural patterns (Krackhardt, 2001), we dichotomized the data for our analysis to include only the most frequent ties between actors, i.e., data indicating individuals interacted at least once every two weeks.

Based upon the different theoretical areas discussed above relating to tie structure and quality, we conducted a series of analyses to examine distinct network measures, such as *density*, the number of social ties between actors divided by the number of total possible connections, as a dense network is thought to be able to move resources more quickly than a network with sparse ties (Scott, 2000). We also examined *fragmentation*, the ratio of the number of disconnected pairs to the possible number of fully connected pairs within a network (Wasserman & Faust, 1994), and *centralization*, as a highly central structures allow a few members disproportionate influence over the flow of resources (Raider & Krackhardt, 2001). Finally, we examined *reciprocity*, or the proportion of mutual connections. We also examined differences relating to type of tie (instrumental versus expressive).

Major Findings

Our study uncovered three important findings that we discuss briefly. While we have four years of data that we can include in our presentation and final paper, due to space constraints for this proposal, we only include two years of network data in Figures 1-4 below.

Network Instability Undermines Learning

One of our main findings from the study relates to the conceptual and methodological challenges of network instability as school and district leaders leave their positions voluntarily or involuntarily from year to year. For example, from Time 1 to Time 2 only 55% of the same leaders were in these roles (we retained them in the sample even if they had moved positions within school and central office) across these two time periods. Given the critical importance of trust and the strong and collaborative relationships that result, this is extremely problematic for organizational learning, generally. In addition, the realities of the low-performing urban district are extremely challenging for using rigorous social network strategies. In essence, the ability to accurately examine changes in network structures and types of relationships over time is difficult when you have such a large degree of turnover from year to year – across a 4-year period it is nearly impossible. In the current study, we used matched comparisons across years to see the extent to which relationships changed in our other work. However, in some ways this misrepresents reality by only considering the relationships of those who stay and not representing all individuals in these networks. Here, instead, we show each year as a point time (not as a matched comparison) using one of our expressive or emotional network areas – who do you go to get the 'scoop' on the district. In the Figure, the black nodes are central office staff and gray are principals. As can seen across the two time periods, each year leaders in this district are having to re-establish underlying relationships, and some degree of connectedness among and between schools and central office at Time 1 is gone by Time 2, with a large proportion of leaders not connected to any other principal or central office staff as designated by the dots on the left hand side of the network map.

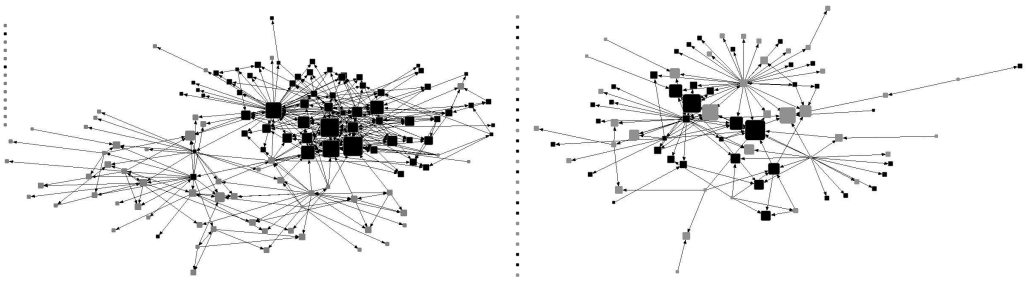

Figure 1. Instability of district-level leadership networks over time

Voluntary and Involuntary Movement of School Leaders Limits Exploitation

Our school-level network data indicates that administrators including both principals and assistant principals play and important role in the exploitation or search for new ideas through the sharing of research-based practices in schools. Given the low-performing nature of these schools having these administrators involved in exploitation, meaning bringing ideas from the external environment into the school, is critical to the learning processes. However, our data from these schools suggest that the larger challenging context along with the improvement strategies embedded in NCLB and more recent reform policies result in high levels of movement of these administrators. To illustrate this point we provide network maps from one of our schools at Time 1 and Time 2 as seen in Figure 2. In this case, the gray nodes are classroom teachers and black nodes are non-classroom teachers meaning administrators in the school, instructional coaches, counselors, etc. The nodes are sized by centrality so you can see the bigger nodes are the ones that most people go to for research-based ideas. The large central node in Time 1 is the principal of the school, who by Time 2 was moved out of the school involuntarily and into central office as part of the policy response to replace the principals of low-performing schools. The result of this move severely disrupted the sharing of research-based practices schoolwide as can be seen in the Time 2 map, with fewer ties and educators, particularly classroom-teachers relying on a different educator in the school with much lower centrality and far fewer ties. We found a similar result in our other high school although the assistant principal who was the source of research-based ideas in this school left voluntarily to move to principal position in another district.

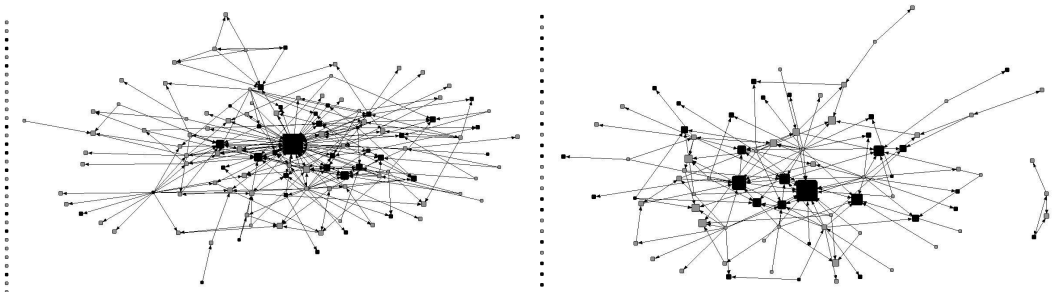

Figure 2. School level ties around research at Time 1 and Time 2

Lack of Reciprocal Relationships Necessary to Develop Trust and Exchange Ideas

A final area of importance is related to collaborative relationships, or reciprocal ties. Across both our school and district levels we found very few reciprocal ties when examining, in this case, the matched network maps over time. For example, although the number of ties for the same group of individuals increased from Time 1 to Time 2 for the instrumental or work-related tie relating to whom leaders turn to for expertise relating to their practice as seen in Figure 3, the proportion of reciprocal ties of all the ties that exist remained very low (under 20%). Furthermore, the expressive ties or more trust-related ties during the same time period decreasing suggesting that the conditions for reciprocal exchange were not sufficient in this district. Figure 4 illustrates the decreasing expressive ties from Time 1 to Time 2 and, as is evident in these maps given the scarcity of ties, few of these expressive ties are reciprocated.

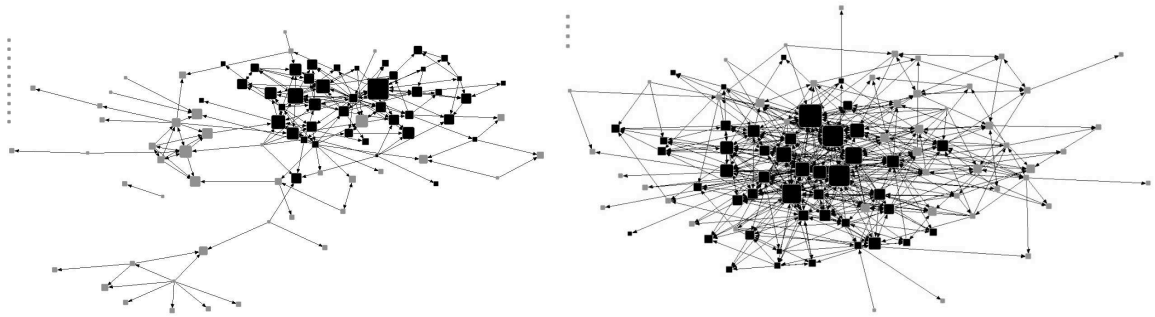

Figure 3. Increased but non-reciprocal instrumental ties over time

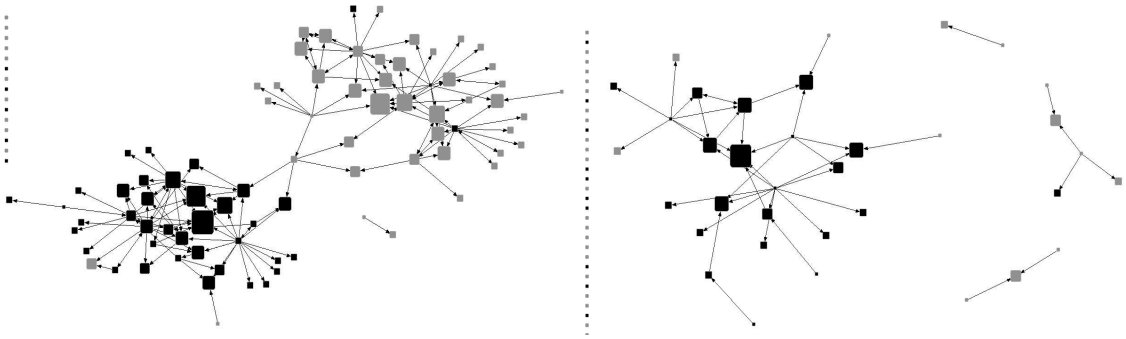

Figure 4. Decreased and non-reciprocal expressive ties over time

Conclusions and Implications

Using social network analyses techniques, we find that the network churn of school and district leaders creates an instability of relationships that undermines the potential for organizational learning. Perhaps connected to this network churn, we find few reciprocal relationships which are the cornerstone of communities of practice. Our study has implications for both the accountability policies that are driving reforms and improvement yet increasing the network churn at both the school and district level. First, the policies are implicated as they have increased levels of stress in these systems as the stakes become so high, resulting in high levels of movement in and out of the leadership team (including principal and central office). Second, they have directly caused some of this network churn through the school turnaround strategy requiring replacement of the principal based upon the number of years on sanction. While our findings have important implications for policy they also have implications for practice and research. At the district level, these data indicate that strengthening the trust within the system may need to be placed on the forefront of activities which can be difficult given the heavy emphasis on technical aspects of reform (e.g., around curriculum or testing). Finally, our study has implications for research given the changing and dynamic nature of these networks over time and strategies that are necessary to capture the underlying relationships, including structure of ties, given this network churn.

Relevance to Conference Theme

This paper contributes directly to the 11th Annual ICLS Conference theme, *Learning and Becoming in Practice*, in two ways. First, it focuses on how learning processes are situated within the practices of educators in low-performing school districts through an empirical study of the connectedness of these educators across the larger organizational context as well as within low-performing high schools. Second, it focuses on the practices for analyzing and modeling learning over time, paying specific attention to the conceptual and methodological issues that arise in these turbulent contexts that have not received sufficient attention in the theoretical or empirical research on organizational learning, school improvement, and accountability policies.

Endnotes

Both authors contributed equally to this paper.

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