THE UNREALIZED CONSTRUCTS OF SCHOOL REFORM

By

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April 20, 2012

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DEDICATION

I dedicate this dissertation to my supportive and devoted family. I offer my sincere appreciation to my husband, Mark Bauman, and to my children, Grant and Shelby, for enduring this journey with me. You are the bedrock of my existence. To my parents, Donna and Larry Conlon, for instilling in me sound values in life, I am most grateful. To my grandparents, Doris Conlon and Doris and David Gahafer, it pleases me to make you proud. I also dedicate this dissertation, in memory of my grandfather, William Conlon, who taught me self-efficacy. My love for all of you is unconditional.

Shannon Conlon

In memory of my nana, Lydia Battendieri, the first teacher and educational leader in my life, I dedicate this dissertation to my family. I offer gratitude to my sons, Cole and Liam, for sacrificing time and attention in order for me to complete this process. I hope to repay them by instilling a love of and respect for education. To my parents, Louis and Lydia Hernandez, who provided me with opportunities for education and raised me to be independent, I am forever grateful. I devote this to my grandmother, Alice Hernandez, and in memory of my grandfather, Luis Hernandez, for enduring a life full of hardships to grant an education to my father. I love you all.

Trish Gallagher

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ABSTRACT
THE UNREALIZED CONSTRUCTS OF SCHOOL REFORM

Shannon Conlon, Trisha H. Gallagher, Scott K. Hooper

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The objective of the study was to explore educational reform efforts using different perspectives to address the gap between policy intent and implementation. The first study examined the association between teacher working conditions and student achievement. When considered without the influence of school poverty levels, linear regressions comparing workplace satisfaction and student achievement revealed moderate to strong associations. The effect of poverty removed the influence of teacher working conditions on student achievement in all areas except school discipline. The second study explored the associations among school leadership, working conditions and student achievement using social network analysis. Results demonstrated that principal centrality and faculty density related to advice in literacy networks were associated with working conditions and student achievement. In addition principal centrality and faculty density related to trustworthiness networks were associated with working conditions and student achievement. Utilizing the same methodology, the third study analyzed the relationship between social networks of parents with teacher perceptions of working conditions, and student achievement. Social network analysis of the size and diversity of parents of children with autism in four schools found no association with working conditions and achievement. Rather, findings included associations between social networks and

contexts of the parent or school. Contexts revealed included number of children with autism, percentage of students receiving free and reduced lunch, percentage of students receiving special education, and district support to a school. Based on our findings from the three studies, we determined that context matters. Therefore, we suggest supplementing the technical framework of reform with a social framework to decrease the gap between policy intent and implementation.

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From the Old Deluder Satan Act to McGuffey Readers, Sputnik, and eventually No Child Left Behind (NCLB), school reform's continual presence in education has brought about a host of changes in our attempts to educate young people. Understanding why the education system requires reform with such frequency presents a significant challenge to educational stakeholders. When initially introduced, each reform brings tremendous hope to those receiving, providing, and supporting educational endeavors. Unfortunately, the fortitude of reform efforts seem to last only a matter of years, resulting in a new reform, directed at improving schools yet again. An evident gap between the intention of the reform and the actual results brought about after implementation persists.

One such reform effort, a predecessor of NCLB, originated with the reauthorization of Title I in 1994, when school leaders were encouraged to abandon efforts to provide targeted assistance to struggling learners and develop school-wide programs aimed at helping all students achieve at high levels (Datnow & Sutherland, 2002; Sterbinsky, Ross, & Redfield, 2006). As school leaders explored the concept of school-wide programs, the eventual passage in 1997 of the Comprehensive School Reform Demonstration (CSRD) program provided significant funding to schools for the implementation of research-based programs, giving birth to the concept of Comprehensive School Reform (CSR) (Sterbinsky, et al., 2006). Borman, Hewes,

Overman, and Brown (2003) described the purpose of CSR programs as "reorganizing and revitalizing entire schools" (p. 126) with a "comprehensive and scientifically based approach to school reform" (p. 127). Provided flexibility regarding the selection of the school-wide, scientifically based program implemented, CSR schools agreed to abide by eleven components, including program guidelines, professional development, goal setting, shared leadership, parent involvement and program evaluation (Borman et al. 2003; Desimone, 2002).

In 1999-2000, more than 1,800 schools began implementing CSR programs, receiving a minimum of $50,000 each year for three years, eventually growing to over 6,000 schools implementing more than 700 school-wide models (Ross, et al., 2004; Sterbinsky et al., 2006; Zhang, Shkolnik, Fashola, 2005). Numerous studies gradually emerged assessing the efficacy of CSR programs through identifying the specific programs resulting in the greatest achievement gains and establishing that the level of implementation on the part of the school determined the level of success (Borman, et al., 2003; Sammons, 2006; Zhang, et al., 2005). Three years of implementation yielded results for schools however, researchers found implementation levels not sustainable as time progressed (Zhang, et al., 2005). In a meta-analysis of the achievement effects of 29 CSR programs, Borman, et al. (2003) found only three programs with the strongest evidence for results and nine programs with promising results, however implementation in few schools.

Mixed results related to achievement growth in CSR schools coincided with similar results in climate. As a school experienced restructuring and reorganization, positive transformations to the school's climate served as an additional desired outcome.

The required components for CSR schools included meaningful involvement on the part of parents and community members, enhancement of shared leadership at the school, active support for reform from all staff members, and the integration of parent involvement and school management with instructional practices (Borman, et al., 2003). Complete school restructuring as a result of CSR implementation brought some improvement in school climate at the middle school level (Graczewski, Ruffin, Shambaugh & Therriault, 2007). Sterbinsky, et al. (2006), in a longitudinal study of 12 CSR schools, found school climate and teacher perceptions more positive. However, a similar longitudinal study in 11 CSR schools obtained only comparable results between control and CSR schools (Ross, et al., 2004). Further, Borman, et al. (2003) concluded:

> Namely, models that required a component designed to involve parents in school governance and improvement had smaller effects on achievement than models that did not require this form of parent participation (p. 152).

In summary, although some improvements in the climate of CSR schools existed, evidence of significant impacts across the CSR program was not evident.

Certainly, based on these results, taxpayers must question the return on investment related to the CSR program. Under NCLB, over 40% of the nation's schools failed to meet adequate yearly progress (AYP) in 2011, with projected numbers of 80% by 2014 (Holland, 2011). CSR models with independent research showing statistically significant achievement gains support continued implementation. However, pressures to meet AYP may entice teachers at CSR schools to abandon requirements such as shared governance, professional relations with colleagues, and parent involvement (Le Floch, Taylor & Thomsen, 2006). Perhaps, de-emphasis upon programs and structures with an

improved focus upon the people involved in education: teachers, principals, and parents; can bring about the success currently lacking in education.

To optimize the benefits while minimizing the risks involved in implementing reform, Bolman and Deal (2008), authors of *Reframing Organizations*, disclosed how prudent leadership recognizes the value of interdependency when navigating highly charged, opinionated topics, such as education. Bolman and Deal (2008) affirmed that redesigning schools encompasses the ability to think about situations in more than one way. For this reason, the authors viewed reframing more as an art than a science. The framework consisted of the following four frames: the structural, human resource, political, and the symbolic. The book's central theme reiterated the conviction that actors make choices inevitably shaped by social context.

Arguably, many components of CSR and NCLB examine education improvement through the lens of Bolman and Deal's *structural frame*. The oldest of the four frames, the structural frame seems ubiquitous among policy makers. The structural frame focuses on organizational standards and goals, which lead to greater productivity. Bolman and Deal (2008) identified six assumptions that serve as the basis for the structural frame:

1. Organizations exist to achieve established goals and objectives.
2. Organizations increase efficiency and enhance performance through specialization and appropriate division of labor.
3. Suitable forms of coordination and control ensure that diverse efforts of individuals and units mesh.

4. Organizations work best when rationality prevails over personal agendas and extraneous pressures.
5. Structures must be designed to fit an organization's current circumstances (including its goals, technology, workforce and environment).
6. Problems arise and performance suffers from structural deficiencies, which can be remedied through analysis and restructuring. (p. 47)

Even use of the term "re-structuring" links the concept of CSR with the structural frame in that CSR calls for schools to re-design structures in their revitalization. The 11 requirements of schools participating in CSR communicate the structures that outline the goals and objectives for all schools participating in the initiative. Many models selected by CSR schools, particularly the ones producing the greatest results require highly structured systems on the part of schools as a means to ensure consistent implementation. For example, one such model, Direct Instruction, goes so far as to provide scripts that teachers must use in their lessons (Borman, et al., 2003). NCLB fares no better in its significant reliance on the structural frame. Principles such as AYP, highly qualified teachers, improvement plans, sanctions, and achievement testing all supply the structures that define paradigms associated with NCLB.

This study suggested that over-reliance upon one of Bolman and Deal's frames, at the expense of the other three, results in the limited or mixed results and the relatively short life-span of school reform efforts. Although many facets of schools align with the human resource, political, and symbolic frames, this study examined the working conditions of teachers, the social networks between and amongst school principals and teachers, and the social networks among schools and parents of students with special

needs as three factors that potentially impact reform efforts and earn the right of further investigation. Expansion of reform efforts outside of the structural frame may contribute to the end of the repeated cycles of reform and just perhaps, lead to the improved success of students.

Teacher Working Conditions

Statewide assessments of the working conditions of teachers began in North Carolina in 2002 through the New Teacher Center (www.newteachercenter.org), headquartered at the University of California in Santa Cruz (Hirsch & Church, 2009). Biennial administrations of the survey in North Carolina continued, and through partnerships with the National Education Association (Exstrom, 2009), expansion in other states resulted in survey administrations in 18 states and select school districts, including an excess of 22,000 schools and 840,000 educators. As the New Teacher Center refined its process of survey administrations, return rates from teachers increased substantially. Completion of the 2010 North Carolina Teacher Working Conditions Survey included 105,688 respondents, an 89% return rate, warranting further study ("North Carolina", 2010).

The absence of a succinct definition for teacher working conditions results in describing the concept in terms of the constructs that illustrate the various aspects of workplace satisfaction. Although the studies used to describe these constructs varied in terminology, the New Teacher Center set forth eight constructs, that when considered in sum, comprehensively describe teacher working conditions: Time, Facilities and Resources, Community Support and Involvement, Managing Student Conduct, Teacher Leadership, School Leadership, Professional Development, and Instructional Practices

and Support ("North Carolina", 2010). Each construct consists of a series of questions (85 questions for all constructs) that provide a valid summary of the concept. For example, in the construct of time, the following questions were asked, with Likert responses ranging from "strongly agree" to "strongly disagree":

a. Class sizes are reasonable such that teachers have the time available to meet the needs of all students.
b. Teachers have time available to collaborate with colleagues.
c. Teachers are allowed to focus on educating students with minimal interruptions.
d. The non-instructional time provided for teachers in my school is sufficient.
e. Efforts are made to minimize the amount of routine paperwork teachers are required to do.
f. Teachers have sufficient instructional time to meet the needs of all students.
g. Teachers are protected from duties that interfere with their essential role of educating students. (www.tellkentucky.org)

Amidst the setting of NCLB and schools facing consequences for failing to meet AYP, the New Teacher Center began calculating correlations between working conditions constructs and student achievement, concluding, "Teacher working conditions are student learning conditions" (Hirsch & Emerick, 2007). These studies found small to moderate effects between working conditions and student achievement (Berry, Fuller & Williams, 2008; Hirsch, 2005; Hirsch, Emerick, Church & Fuller, 2006; Hirsch, Sioberg & Germuth, 2010). If found, independent studies associating working conditions and

student achievement will lead to evidence for increased emphasis upon the human resources frame in an effort to balance the structural aspects of CSR and NCLB.

Social Networks of School Leaders and Teachers

As school improvement efforts unfolded, school administrators toiled to enforce educational policy (Wolf, Borko, Elliott & McIver, 2000). Today's political and educational landscapes across the country attest to a myriad of obstacles encountered as the United States implements state and national policies at the local level (Spillane, Reiser, & Gomez, 2006). Contributing to the complications of executing policy entails coalition politics. How these key actors play a role in the intricacies of implementing policy rests in the intent. Some reform leaders express, either explicitly or implicitly, alternative motives of reform. Regardless of communication style, policy makers make concessions to appeal to special interest groups in order to gain the support from diverse group members. For instance, some interest groups may articulate the desire to curb the power of teacher unions. The motivation of other groups may consist of seeking financial aid for education. The outcome frequently results in a problematic policy consisting of a collection of initiatives to address a variety of goals counterintuitive of each other.

Impediments to fulfilling policy also arise from a key assumption that policy makers believe those responsible for implementing policy understand the policy (Spillane, Reiser, & Gomez, 2006). In truth, policies occasionally communicate unclear and incoherent directives. In addition, local context influences the interpretation as well as implementation of state and federal policies. For instance, educators of one school may consider a particular practice a new initiative while educators of another school view

the same practice as a part of daily procedures. To expound on the important concept of contextualization, humans use schema to make sense of new information. The utilization of prior knowledge allows people to adapt novel information to fit current situations. Deciphering the meaning of a policy in different contexts may lead to misinterpreting a policy unknowingly. Furthermore, even if school leaders interpret the policy accurately, schools may lack the human capital and fiscal resources needed to implement policy as intended. Lacking a basic understanding of the policy in tandem with contextual bias creates ambiguity and undermines local implementation (Sabatier, 1988). In addition, the desired changes in performance prompted by policy and the magnitude of these preferred changes impact the success of implementation (Spillane, Reiser & Gomez, 2002). To address the latter, Cuban (1988) recommends incremental changes to increase the likelihood of successful execution to stimulate changes in behavior.

The intricacies involved in designing policy coupled with urgent demands to improve student achievement for all students pose immense challenges to school leadership (Mintrop & Trujillo, 2007). To address the enormity of these challenges requires school leaders to pursue a delicate balance between federal mandates and local autonomy (Spillane, Reiser & Gomez, 2002, Daly, 2009). Further complicating this sense of balance stems from the premise that many educators denounce the idea so often found in the one size fits all comprehensive school reform initiatives. As an avant-garde approach, many educators consider the merit of determining specific means to address student needs unique of a school population. This philosophical principle commonly misconstrued as nonconformity invites questions, criticism and scrutiny. Indeed, reform of this magnitude and swiftness insists on inspection by all stakeholders. Immersed in

this dilemma created by a conflict between philosophical beliefs and educational policy, principals must ascertain how to most effectively and efficiently implement policy in such a way that maximizes the potential of all students. Leaders must possess the resolution and freedom to unearth vanguard ideas in meeting the needs of students the schools serve. Moreover, due to a shortage of experts involved in exploring unfamiliar terrain of innovation associated with student success, calculated risks deem necessary amid the pursuit of the essence of policy (Spillane, Reiser & Gomez, 2002).

To assist school leaders in plotting a course of action to undertake the elusive goal of student achievement for all students while managing a multitude of other school related responsibilities, Bolman and Deal's frames provide leaders a means to become cognizant of school conditions they may otherwise fail to notice. In addition, accurately selecting one of the four lenses to correspond to a specific situation enables a leader to effectively make well-informed decisions. In return, effective decision-making increases confidence and reduces stress triggered by difficult circumstances along the way.

Bolman and Deal (2008) relate the structural frame to a factory. This approach attempts to alleviate the obstacle of blaming individuals and focuses on a systemic problem by examining a familiar problem through a different lens. Typical standards, measures, and accountability easily recognized amid policies liken to familiar educational problems. Social capital, a less conventional approach to achieving goals, equates to looking at a problem from a less familiar perspective. Social network analysis (SNA), considered a perspective and a tool, examines social relationships by analyzing patterns among individuals in a network (Scott, 2000). Networks perform a number of functions, such as advancing projects, conveying culture, mentoring, and developing "professional

learning communities, that formal structures may otherwise perform inadequately. Disregarding or misinterpreting people's roles in networks foreshadows costly errors (Reagans & McEvily, 2003). SNA promotes thinking "outside the box" by exploring familiar school situations in an uncommon fashion to decipher if the assigned tasks and responsibilities achieve stated goals.

The complexity of school organization necessitates utilizing each of the four frames. This approach, called multi-frame thinking by Bolman and Deal (2008), matches frames to situations: Each frame offers a unique perspective to common challenges. Selecting the most appropriate frame for each particular situation, without overemphasis upon one specific frame, supplements the process of deciding the most propitious course of action (Bolman and Deal, 2008).

The human resource frame, often preferred by principals, entails nurturing a sense of ownership by sharing individual needs and motives (Bolman & Deal, 2008). An organization's most vital asset pertains to people. Moreover, Granovetter (1985) maintained that relationships often supersede structure. The overreliance on reason and underutilization of relationships help explain why leaders fail to complete tasks and accomplish goals. Due to the complex nature of school organizations, a sense of shared responsibility, which fosters a sense of ownership, renders obligatory (Daly, 2009).

The political frame highlights the restraints of authority and reveals how the continuous episodic cycle of conflict and compromise acts as a source of renewal (Bolman & Deal, 2008). Bolman and Deal (2008) considered the dearth of resources and status quo attribute to competition, and conflict ensues. Conflict wrestles with status quo. In addition, personal and social change, creativity and innovation stem from conflict.

Heffron (1989) attested that conflict promotes new ideas and methodologies to problems and inspires innovation through curiosity and imagination.

Leaders must cope with conflict effectively by using power carefully. Pfeffer (1992) exemplified power as "the potential ability to influence behavior, to change the course of events, to overcome resistance, and to get people to do things they would not otherwise do" (p. 30). Bolman and Deal (2008) defined power simply as the capacity to make things happen. Clear and concise goals emerge through compromise and bargaining among the various stakeholders. Kotter (1988) offered four fundamental steps for exercising political influence:

1. Identify relevant relationships
2. Identify who might resist, why, and how strongly
3. Develop, wherever possible, links with potential opponents to facilitate communication, education, or negotiation
4. Select and implement either more subtle or more forceful methods if step three fails.

Shared values and meanings cultivated by rituals, ceremonies and beliefs illustrate the symbolic frame (Bolman & Deal, 2008). Zott and Huy (2007) distinguished a symbol as "something that stands for or suggests something else; it conveys socially constructed means beyond its intrinsic or obvious functional use" (p. 72). Bolman and Deal (2008) depict the symbolic frame as speaking to the mind and heart by embracing school culture, or in other words, 'the way we do things around here'. More importantly, the symbolic frame emphasizes not so much what happens, but the meaning behind what happens. In addition, local communities judge schools as much on appearance as outcomes.

Symbolic school leaders provide inspiration by offering hope, the internal glue of organizations.

Meyer and Rowan (1983) described the structure of the public school as mostly symbolic. The symbolic frame embraces spirit consisting of faith and purpose. Symbolic artifacts, tangible and intangible, include meetings, planning, evaluation, collective bargaining, reflection, and power. Relating to evaluation, Floden and Weiner (1978) argue:

> Evaluation is a ritual whose function is to claim the anxieties of the citizenry and to perpetuate an image of government rationality, efficiency, and accountability. The very act of requiring and commissioning evaluations may create the impression that government is seriously committed to the pursuit of publicly espoused goals, such as increasing student achievement or reducing malnutrition. Evaluations lend credence to this image even when programs are created to appease interest groups (p. 17).

In general, educators rely heavily on the human and structural frames when dealing with leadership issues (Bolman & Deal, 2008). Education operates as a social institution that abides by formal structures and processes. However, due to the ambiguity of schools, educators encounter impasses requiring political and symbolic perspectives. Guard against working in only one frame as it limits the perspective and might not allow for analyzing the complexities of the situation. Whether attributed to a lack of awareness or naiveté, operating from one framework leads to unintended consequences (Bolman & Deal, 2008).

Reframing typical problems experienced by educators can provide powerful leadership strategies. Bolman and Deal (2008) stated as leaders apply the frames, the following occurs:

1. The frames help them see things they have overlooked and come to grips with what is really going on
2. When individuals reframe, they see new possibilities and their responses become more versatile and effective.

A critical element to enhancing student improvement entails human relationships (Bryk & Schneider, 2003; Tschannen-Moran & Hoy, 2000). By revisiting the art of leadership through relationship building, school leaders may capitalize on the ability to enhance student improvement. Although relationship building does not equate to a panacea to increasing student achievement, collaborating for the common good of all children provides a credible argument as an integral part of the solution to educational attainment.

Social Networks Between Schools and Parents of Students With Special Needs

In addition to ensuring a positive working environment for teachers and demonstrating leadership through developing networks with teachers, school administrators carry the responsibility of meeting the needs of specific groups of students, principally students with low levels of achievement ("Subgroup Performance," 2006; Cortiella, 2006; DiPaola & Walther-Thomas, 2003). Under NCLB, schools must ensure learning and proficiency of all students. The law mandates disaggregation and public reporting of subgroup scores, designed to analyze achievement gaps ("Subgroup Performance," 2006). Subgroups consist of minority populations faced with diverse

challenges in the educational environment. Subgroups represented in NCLB include, students from low-income households, students with limited English-proficiency, students of minority status, and students with disabilities ("Subgroup Performance," 2006). NCLB seeks to improve education for all students, emphasizing achievement of students from low-income backgrounds (Cortiella, 2006; Cortiella, 2007; Yell, Drasgow, & Lowrey, 2005).

Regardless of abilities or style, disaggregation of subgroup achievement data imposes challenges on all leaders. The Center for Comprehensive School Reform and Improvement (CCSRI) reported that educators direct school improvement efforts at subgroups ("Subgroup Performance," 2006). Professionals responsible for implementation of federal legislation face contextual factors associated with subgroup achievement. Obstacles arise in copious urban areas of the United States, evolving from the need to improve learning outcomes for multiple subgroup populations (Fusarelli, 2004; Hanushek & Raymond, 2005; Jennings & Rentner, 2006). Urban centers draw immigrant families with employment opportunities while providing affordable housing for families of low income or poverty. Additionally, urban centers continue to provide amenities for families from different racial and ethnic backgrounds. Due to the variety of challenges resulting from the diverse needs of each subgroup population, urban educational leaders face criticism in all organizational aspects.

School leaders rarely escape the complexities of educating students with disabilities (DiPaola & Walther-Thomas, 2003); in fact, the CCSRI reported that educators direct school improvement efforts specifically at students with special needs ("Subgroup Performance," 2006). As a subgroup, students with disabilities constitute an

extremely disparate population which often receives blame for schools not making adequate yearly progress (AYP) ("Subgroup Performance," 2006). In addition to their disability, many students fall within multiple subgroups of NCLB. When responding to the diverse educational impacts faced by students due to distinct disabilities, leaders encounter challenges imposed by NCLB along with another policy aimed at improving the civil rights of students with disabilities, the Individuals with Disabilities Education Act (IDEA). As NCLB evolved, IDEA, through reauthorizations, aligned with NCLB's emphasis on standards and assessment for students with disabilities (Cortiella, 2006; Cortiella, 2007). IDEA focuses on students with disabilities, in quest of specialized services for students in order to assist in access to core content and the ability to benefit from education (Cortiella, 2006).

Although IDEA began as a civil rights act to acquire educational services for students with disabilities, through reauthorizations, legislators address the obstacles encountered by schools and students due to its implementation. States currently practice the most recent reauthorization, IDEA 2004. During the 2004 update, responding to low expectations placed on students with disabilities and lack of research on proven teaching methods for students with disabilities, Congress aligned IDEA with NCLB (Cortiella, 2006; Cortiella, 2007). Within IDEA 2004, students with disabilities continue to receive a free appropriate public education (FAPE) in the Least Restrictive Environment (LRE). Architects of IDEA 2004 designed the act to establish special education and related services tailored at addressing the unique needs of students and preparing them for postsecondary education, employment, and independence. Schools implementing the

federal policies of NCLB and IDEA 2004 expose students with disabilities to content based on state standards and assess students on these standards (Cortiella, 2006)

Policy mandates assessment for all students (Cortiella, 2006; Cortiella, 2007; Yell, et al., 2005). The only students excluded from the grade level assessment requirement are those with the most severe disabilities (e.g., Autism, Down syndrome, severe physical disabilities). Students with severe disabilities take an alternate assessment. NCLB requires 95% of students with disabilities take the state, some with accommodations and some without (Cortiella, 2006; Cortiella, 2007; Fusarelli, 2004; Yell et al., 2005). Assessment requirements introduce school administrators to the obstacle of assembling enough adults to provide accommodations for students and ensuring the provision of appropriate accommodations. Permissible accommodations include extended time, use of manipulatives, use of calculator, reader, scribe, paraphrasing, and implementation of other supports that allow students to express their knowledge despite the challenges imposed by their disability (Cortiella, 2006).

State accountability systems allow assessment options for students with the most severe disabilities. Possible alternate assessments consist of alternate assessment on grade-level achievement standards and alternate assessment on alternate achievement standards. The federal government allows districts and states to include passing achievement scores for 1% of students taking the alternate assessment based on alternate achievement standards (Cortiella, 2006; Cortiella, 2007; Yell, et al., 2005).

In order to prepare subgroup populations, specifically students with special needs for assessment and expose them to core content, schools must execute policies instituted by national educational policy, such as universal design for learning (UDL), Response to

Intervention (RTI), and Positive Behavior Supports (Cortiella, 2006; Cortiella, 2007; DiPaola & Walther-Thomas, 2003; Sailor, 2002; Sugai, et al., 2000). Leaders and teachers regard mandates to implement specific interventions or the lack of clarity on how to differentiate to address various learning needs of students as exorbitant. Educational professionals yearn for the opportunity to address the unique needs of their school's population through local initiatives and criticize requirements that create increased paperwork or following strict plans of action.

Teachers encounter challenges in meeting the diverse needs of students with disabilities, especially when they educate students with different disabilities and at varying academic levels concurrently. General education and special education teachers find it essential to collaborate to meet the needs of students with special needs in the general education setting (DiPaola & Walther-Thomas, 2003; Sailor, 2002). Additionally, both NCLB and IDEA 2004 require parent-teacher collaboration (Epstein, 2005; Staples & Diliberto, 2010; Turnbull, 2005). Administrators find it necessary to embrace inclusion and become responsible for creating a climate that encourages inclusive practices to fulfill the requirements of NCLB and IDEA 2004 (DiPaola & Walther-Thomas, 2003; Praisner, 2003; Sailor, 2002).

Within the subgroup of students with disabilities, students with autism represent the fastest growing population (Scull & Winkler, 2011). Furthermore, students with autism pose the challenges to school staff due to their unique needs (Koegel, Robinson, & Koegel, 2009). Not only do students with autism demonstrate needs in the area of academics, but they also face challenges in other areas which impact their success in school. Additionally, placements for students with autism encompass all placement

options available to students, ranging from special classrooms to advanced placement programs (Koegel, et al., 2009). Autism, a neurological disorder, manifests in social communication deficits and restricted interests or repetitive behaviors. In schools charged with graduating college or career ready students, social communication skills comprise a key component of success. Students with autism demonstrate with a variety of levels of functioning with respect to cognitive, self help, and academic skills. To facilitate successful programs, teachers have to address student's academic needs, as well as their needs in the areas of independent functioning, self regulation, and behavior. Educational professionals find it difficult because each student with autism presents with diverse needs due to its manifestation in each developmental area (Holtz, Ziegert, & Baker, 2004). Therefore, what resulted in success for one student with autism may result in failure for another, posing challenges for all educators.

When leaders, already facing the enormous challenges of federal reform efforts, address educational programs for students with special needs, implications arise in all organizational frames presented by Bolman and Deal (2008). Leader's responses to federal legislation impact all stakeholders and all systems in the organization, in this case the school or district. Each of Bolman and Deal's (2008) frames, presented in the context of organizational change, pertain when enacting change focused on one subgroup. To ensure success and limit conflict, leaders must evaluate situations within the context of the organization and make well informed decisions.

Possibly the most obvious to educational leaders, the structural frame embodies the policy (Bolman & Deal, 2008) mandating change in educating students with disabilities. As presented above, both NCLB and IDEA 2004 direct efforts to enact

change. Although no one can refute the priorities of legislators to improve outcomes for student with special needs, legislation does not designate the course to achieve change and improve outcomes for students with disabilities. Charged with enacting legislation, states interpret NCLB and IDEA 2004 and implement efforts to meet the mandates of these acts. Each state executes policy through diverse means as a result of divergent interpretations of the acts. Once policy progresses to the district and school levels, additional reasoning impacts implementation at the school level (Ramanathan, 2008).

The human resource frame (Bolman & Deal, 2008) encompasses multiple stakeholders and poses various opportunities to influence organizational change. Leaders must address the needs of all stakeholders, even when they conflict. Ensuring a strong, safe climate for teachers may conflict with student needs when discipline decisions based on policy contradict those desired by teachers. Creating a climate conducive to inclusion strengthens relationships with families of students with disabilities while it may dissuade families of gifted students. In order to form productive relationships with all stakeholders, leaders must feel just in their actions, understand the impact on all interest groups, and stand by their decisions without backing down for powerful stakeholders.

An additional issue faced by educational administrators in the human resource frame relates to teacher working conditions. Support from principals and other teachers influences special education teachers' sense of working conditions. Fifty percent of special education teachers resign within three years and cite lack of leadership as one reason for leaving (DiPaola & Walther-Thomas, 2003). In a time of high attrition rates of special education teachers, a climate of support maintains significance (DiPaola & Walther-Thomas, 2003).

The political frame (Bolman & Deal, 2008), beset with conflict, imposes on change efforts of all leaders. Plagued with competing values, beliefs, and interests of various stakeholder groups, the political frame presents obstacles for leaders at all levels of educational organizations. Due to conflicting interests, power becomes imperative for leaders (Bolman & Deal, 2008). Bargaining and negotiation contradict the intended outcomes of NCLB and IDEA 2004. When presented with the goal of improving educational outcomes for all students, leaders must impose power cautiously while not losing sight of the desired outcome, achievement. Bolman and Deal (2008) proclaim that during difficult times politics intensifies due to scarce resources. Various advocacy groups represent students with different disabilities and campaign to improve the group's educational programs despite the interests of the entire community. What empowers one advocacy group may compromise the interests of others. Leaders must understand educational goals and negotiate to achieve the goals for all students without compromising the interest of any faction.

Leaders address the symbolic frame with school climate and culture. The meaning of decisions comprises the symbolic frame of an organization (Bolman & Deal, 2008). Educational leaders often find it complicated to change symbols shaped by the actions of prior leaders. When presented with federal legislation, leaders may feel conflicted about enacting legislation due to the symbolism of their actions. Stakeholders, desperate to find direction and resolve conflict, may misinterpret meaning either positively or negatively (Bolman & Deal, 2008). Therefore, leaders must nurture a climate of trust and culture that aligns with organizational goals (DiPaola & Walther-Thomas, 2003). To ensure achievement and positive outcomes for students with

disabilities, leaders must create an inclusive climate in which all stakeholders value education in the LRE and strive to maintain collaboration (DiPaola & Walther-Thomas, 2003).

Educational leaders are obligated to meet the needs of all stakeholders while enacting legislation that to some extent divides stakeholder with different interests (e.g., teachers and parents). To ensure positive outcomes, leaders must set goals and remain focused on desired outcomes despite challenges imposed by implementation of federal mandates. Decisions and actions of educational leaders transpire in the context of the organization, therefore legislation cannot mandate specific reform efforts at each level, but must delineate outcomes and allow state, district, and school leaders to make informed decisions.

THE CONFLUENCE OF TEACHER WORKING CONDITIONS AND STUDENT ACHIEVEMENT

The era of school accountability and "leaving no child behind" focuses the work of educators upon relentless efforts to increase students' reading and math achievement, regardless of race, disability, or socio-economic status (SES). As school leaders investigated strategies to meet these demands, the notion of assessing teacher workplace satisfaction emerged as a variable for study by states searching for school success (Ladd, 2009). Resulting from a state study of teacher working conditions and student achievement, Hirsch and Emerick (2007) proclaimed, "Teacher working conditions are student learning conditions" (p. 4). Perhaps improving the working conditions of educators supplies a tool for schools as they seek to achieve adequate yearly progress (AYP). However, emphasis upon enhancing teacher working conditions, while satisfying the demands of citizens related to public education, tests the acumen of decision-makers due to the complex nature of workplace satisfaction and the results oriented expectations of taxpayers.

Ironically, consequences imposed upon schools failing to meet AYP may harm the very teacher working conditions that are associated with higher student achievement. Consequences faced by schools not meeting the goals of the No Child Left Behind Act (NCLB) brought moderate levels of stress and despair among administrators and teachers as they experienced threats to their livelihood (Carlin, 2010; Tucker, 2009). Such anxiety

has produced negative impacts upon the working conditions of educators (Davis, 2010; Kelly, 2006; Schoen & Fusarelli, 2008). Hence, if a positive correlation between teacher working conditions and student learning exists, then the outcome of those consequences would contradict the intent of reform – ensuring that all students, regardless of race, disability, or SES, achieve at high levels.

The purpose of this study was to determine if an association exists between teacher perceptions of working conditions and student achievement. Three research questions guided the study:

1. What is the association between teacher working conditions and student achievement?
2. What is the association between teacher working conditions and student achievement in schools with the same principal leadership greater than two years?
3. Does the association between teacher working conditions and student achievement differ in schools experiencing growth, decline, or no change in achievement?

Evidence of a significant, positive correlation between working conditions and achievement provides justification to continue discussion on the efficacy of current school consequences. Although some research supports the belief that high student achievement results in improved workplace satisfaction (Patrick, 2007), this study examined the possibility of the opposite causal direction. If teacher working conditions partially cause productive student learning conditions, then officials might wish to identify school level interventions that augment, rather than diminish, teacher workplace satisfaction, resulting in improved student achievement. Scant, independent research

exists regarding the association of working conditions and student achievement, demonstrating the need for, and prompting of this study.

Background

Definition of Teacher Working Conditions

Due to the broad nature of the construct, "teacher working conditions," the development of an accepted definition or commonly accepted set of constructs and sub-constructs that describe working conditions becomes problematic (Berry, Smylie, and Fuller, 2008). Patrick (2007) identified five key factors that influence teacher working conditions: "administrative support, student behaviors, workplace atmosphere, autonomy, and efficacy" (p. 17). However, Ladd (2009) noted:

> "At the most general level, working conditions for teachers are influenced by the physical features of the work place, the organizational structure, and the sociological, political, psychological and educational features of the work environment." (p. 7)

In an attempt to develop accepted factors that make up the concept of teacher working conditions, Berry, et al. (2008) proposed the constructs of time, facilities and resources, teacher empowerment, leadership, and professional development as measures for teacher working conditions.

Expanding from Berry's recommendations and consistent with factors used in another state-level study ("North Carolina," 2010), this study examined eight constructs to describe teacher working conditions: Time, Facilities and Resources, Community Support and Involvement, Managing Student Conduct, Teacher Leadership, School Leadership, Professional Development, and Instructional Practices and Support

("Executive Summary," 2011). Although similarities amongst studies exist concerning the factors related to teacher working conditions, the use of common terminology and an accepted definition increases the construct validity of future research.

Working Conditions, Retention, and Leadership

The evolution of post-NCLB studies on teacher working conditions began with its influence upon teacher retention (Berry, Darling-Hammond, Hirsch, Robinson & Wise, 2006). The working conditions encountered by teachers significantly affected the intent of teachers to remain in their current position (Exstrom, 2009; Hirsch, 2005; Hirsch, Emerick, Church & Fuller, 2006; Ladd, 2009; Seymore, 2011). Reasons cited for leaving current positions included an opportunity for a better teaching assignment, dissatisfaction with workplace conditions, and dissatisfaction with administrative support (Berry, Rasberry & Williams, 2007; Marvel, Lyter, Peltola, Strizek, & Morton, 2006). Tracking, analyzing, and improving teacher-working conditions offered states effective tools as they attempted to recruit and retain new teachers (Berry & Hirsch, 2005).

From the study of working conditions and teacher retention emerged the presumed value of school leadership on workplace satisfaction. A 2006 school climate survey administered to 81,000 teachers in South Carolina revealed that school leadership, through providing administrative support and addressing teacher concerns, played a prominent role in the perception of positive working conditions (DiStefano, et al., 2008). Emphasis upon the development of the relationships between teachers and principals also led to improved job satisfaction among teachers. Tuell (2006) attributed approximately 12% of variance on a measure of a teacher's overall job satisfaction to their relationship with the principal in a survey of 364 teachers in Maine. An Australian study of 101

teachers found that 97% of the sample maintained that school level leadership significantly influenced teacher morale (Mackenzie, 2007). One participant noted, "Teacher morale is a by-product of visible, demonstrated support and respect from those who administer the system" (Mackenzie, 2007, p. 95).

In 2006, Milanowski, et al. conducted a mixed methods study using focus groups and a survey with pre-service teachers found principal support, more than pay level, motivated pre-service teachers to choose a school in which to serve. Milanowski, et al. (2009) noted, "A principal with a reputation for understanding teaching and learning and establishing supportive relationships with teachers increases the odds of the average respondent saying they would apply by a factor of almost four" (p. 5). Furthermore, leadership impacts student achievement through indirect or mediating factors. Bulrus (2009) completed a meta-analysis of 30 studies, examining 152 correlations from 3,378 schools, concluding that the construct of school culture served as a mediating factor of leadership that demonstrates a moderate effect ($R = 0.35$) upon student achievement. Efforts to expand upon studies related to teacher retention and leadership resulted in a series of surveys designed to provide comprehensive evaluations of teacher working conditions at schools.

Working Conditions Surveys

In 2002, the department of education of the state of North Carolina embarked on an initiative to assess teacher working conditions through a state-wide, online survey. Headquartered at the University of California in Santa Cruz, the New Teacher Center (www.newteachercenter.org) conducted the survey (Hirsch & Church, 2009). The New Teacher Center continued biennial administrations of the survey in North Carolina, with

the 2010 North Carolina Teacher Working Conditions Survey including 105,688 respondents, an 89% return rate ("North Carolina", 2010). After North Carolina experienced success evaluating the perceptions of working conditions by the state's teachers, other states followed, including Colorado, Illinois, Kansas, Kentucky, Maryland, Massachusetts, Tennessee, Vermont and West Virginia through partnerships with the National Education Association (Exstrom, 2009). Since 2008, the New Teacher Center has administered the survey in 18 states and select school districts, including more than 22,000 schools and 840,000 educators.

The 2010 North Carolina Teacher Working Conditions Survey assessed eight constructs within the domain of working conditions: time, facilities and resources, community support and involvement, managing student conduct, teacher leadership, school leadership, professional development, and instructional practices and support ("North Carolina," 2010, p. 2). Using student achievement data, New Teacher Center researchers ranked schools into quartiles and identified statistically significant differences in four constructs (managing student conduct, teacher leadership, school leadership and community support and involvement). One of the study's findings was that teachers rated working conditions most positively in high performing schools. Correlations between achievement and working conditions showed significant associations in several areas. Community support and involvement ($R = .39$) and managing student conduct ($R = .24$) emerged as the constructs most associated with higher student achievement across all schools within the state. The constructs not statistically significant across all instructional levels were time, professional development, and instructional practices and support ("North Carolina", 2010).

The New Teacher Center conducted similar studies in other states examining the association between working conditions and achievement (Table 1). Based on differences between individual agreements with states, the working conditions constructs assessed and the statistical methods utilized varied. Consequently, state-to-state comparison of data proved difficult. Examination of state data confirmed statistically significant associations between working conditions and achievement in several areas (Table 1). However, Cohen (1992) termed correlations of this scale to be either small or perhaps medium in some cases, thus the magnitude of these correlations require further study. Additionally, the New Teacher Center, the agency contracting survey administrations and vested in the expansion of working conditions surveys with other governmental entities conducted these studies, therefore independent examination of data adds valuable insight.

Independent Studies of Working Conditions and Achievement

Minimal studies independent of the New Teacher Center have been published. North Carolina case studies of three schools, detailed interviews with principals, and focus group interviews with teachers found an association between principal behaviors and the work environment of the school, as well as the work environment and student success indicators (Ellis, 2010). Survey results from 56 certified staff members in a California school district with low student performance found that teachers reported that low achievement occurred when teacher satisfaction in regards to school leadership proved also low. Only 36% of respondents reported satisfaction with leadership (Schmidt, 2009). In Ohio, comparing the Teacher Dispositions Index of 136 teachers with the percentage of their students passing the Ohio Achievement Test, math

achievement was not significantly associated (R = .03), however reading was significantly associated (R =.22) with the teachers' disposition towards students, curriculum, or professionalism (Scrivner, 2009).

Table 1

Studies Involving New Teacher Center Working Conditions Surveys in Other States

Study	Survey	Sample	Significant Findings
Hirsch (2005)	2004 South Carolina Teacher Working Conditions Survey	15,200 responses from teachers working in 90% of state schools and 100% of districts	29% of respondents reported empowerment as the most critical factor for student learning; 24% reported time as the most critical factor. Teachers from schools meeting AYP report greater satisfaction than teachers from schools not meeting AYP in 5 constructs (Time: 3.21 vs. 3.09; Facilities and Resources: 3.89 vs. 3.68; Leadership: 3.89 vs. 3.69; Empowerment: 3.47 vs. 3.20; Professional Development: 3.90 vs. 3.70).
Hirsch, et al. (2006)	2006 Phase-in Teacher Working Conditions Survey in Arizona	5,200 responses from teachers of 18 school districts in Arizona	30% of respondents reported empowerment as the most critical factor for student learning; 25% reported time as the most critical factor. Fifth grade students meeting standard in reading produced significant correlations in facilities and resources (R=.39) and leadership (R=.33). 5th grade students exceeding standard in reading produced significant correlations in empowerment (R=.42) and leadership (R=.48). 5th grade students meeting standard in math produced significant correlations in facilities and resources (R=.58) and leadership (R=.33).
Berry, Fuller & Williams (2008)	2007 Mississippi CLEAR Voice Teacher Working Conditions Survey	25,408 responses from teachers working in all 156 districts across the state	Multiple regression analysis identified mixed results relating working conditions and student achievement, with no clear pattern evident. Data indicates that across levels, no statistically significant factors exist. Although statistically significant factors appear in some levels, none seem to have a large effect size.
Hirsch, Sioberg & Germuth, (2010)	2009 TELL Maryland survey	43,400 responses from teachers working in all districts across the state	38% of respondents reported time as the most critical factor for student learning; 24% reported student conduct as the most critical factor. Strong correlations emerged across all three levels between student math achievement and the working conditions constructs of Student Conduct (elementary = .41, middle schools = .38, high schools = .30) and Community Engagement (elementary = .56, middle schools = .68, high schools =.45).

Patrick (2007), using survey and student achievement data from approximately 500 middle school teachers in Georgia, found a positive correlation between workplace satisfaction and student achievement. Patrick calculated a mean satisfaction index of respondents using the mean responses for each survey question and then sorted participants into two groups: high satisfaction and low satisfaction. Through an independent t-test comparing the means of the student achievement scores of participants in the high and low satisfaction groups, Patrick found statistically significant differences. Patrick concluded that "the more satisfied a teacher was, the more likely his or her students were to have high achievement scores" (p. 122). However, examining the individual factors within workplace satisfaction, Patrick found that none of the constructs of working conditions produced statistically significant correlations.

A minimal number of independent studies exist and still use the New Teacher Center's working conditions data. Drawing from the 2002 North Carolina Working Conditions Survey, with middle school data for the four largest urban school districts in North Carolina (46 schools, 2,900 teachers), Turner (2007) found a significant correlation between teacher job satisfaction with reading achievement (R = .24) and between teacher job satisfaction with math achievement (R = .22). Ladd (2009), utilizing data from the 2006 North Carolina Working Conditions Survey found, "teachers' perception of their working conditions contribute modestly to school-specific differences in student achievement across primary schools, with the contribution somewhat larger for math achievement than for reading" (p. 36). In mathematics, statistically significant correlations for the leadership construct (R = .02) and the planning time construct (R = .13), as well as in reading, correlations for the facilities construct (R = .02) and the

planning time construct (R = .11) offers evidence of the modest associations between working conditions and achievement (Ladd, 2009).

Summary

Reviewing data from the working conditions surveys across states through the Center of Teaching Quality (www.teachingquality.org), Berry, et al. (2008) noted the need for an improved definition of working conditions and then the determination of which working conditions impact student achievement. Additionally, the existence of minimal research external to the New Teacher Center led to a need for independent study. With few exceptions, the correlation between various constructs within the realm of teacher working conditions seemed inconsistent and modest at best. Causes of those inconsistencies entailed three issues: differences in working conditions constructs evaluated across states, differences in state assessment systems, and differences in statistical methods used to analyze data. For example, researchers evaluated community involvement and support in North Carolina, but not in South Carolina and Arizona. These differences hampered state-to-state comparisons.

Finally, when comparing working conditions and achievement, various studies incorporated school poverty levels along with other school factors, such as teacher certification, percent Title I, percent limited English proficient, and percent minority (Berry, et el., 2008; Hirsch, 2005; Hirsch, Sioberg & Germuth, 2010; "North Carolina", 2010). Within these models, however, researchers did not partial out only the influence of poverty prior to examining the effect of teacher perceptions of working conditions on student achievement. The other school factors considered included a level of redundancy with poverty levels due to factors such as percent minority and percent Title I typically

being highly associated with poverty. Narrowing the focus of other school factors studied to only poverty levels and separating the influence of poverty prior to identifying the association between teacher working conditions and student achievement perhaps results in a more valid examination of this association.

Analysis of working conditions and achievement data in other states adds to the knowledge base of this phenomenon. If available, the multi-state use of common working conditions surveys, common achievement data, and common statistical methods for data analysis would have resulted in the ability for comparison. Nevertheless, the study of a state's data in isolation supplies additional insight related to the importance of teacher working conditions with regard to improving student achievement. The accumulation of independent data from several states leads to an improved understanding of the value of working condition surveys. Quantitative analyses of the Teaching, Empowering, Leading and Learning Survey (TELL) administered in Kentucky in spring, 2011 and the Kentucky Core Content Test (KCCT), also administered in spring, 2011, determined the association between teacher working conditions and student achievement in Kentucky.

Methods

Participants

The population of interest for this study included all schools within Jefferson County Public Schools (JCPS), using district achievement data from the 2010-2011 school year. The 159 JCPS schools included 89 elementary, 23 middle, 19 high, and 28 "special" schools (K-12 and 6-12 school, alternative, special education and state hospital schools). Demographic data of students (99,919) across the district included 51.7%

Caucasian, 37.2% African American, and 11.1% other. Approximately 62% of district students qualified for the federal free/reduced lunch (F/R lunch) program. District per pupil spending equaled $12,425 as opposed to a state average of $10,472.

JCPS employed 6,921 certified staff, with 83.3% of teachers in elementary, middle and high schools holding masters degrees or higher and 95.8% considered "highly qualified" by NCLB standards, with an average experience of 11.2 years. The average salary of certified teachers in JCPS was $56,129, with a state average of $49,614. JCPS reported teacher retention rates at the elementary, middle and high school levels to be 90.6%, 86.2%, and 86.1% respectively. The Kentucky Department of Education (2011) cited the percentage of minority certified teachers in JCPS to be 15.7%, as opposed to a state average of 4.4%. The Jefferson County Board of Education annually negotiates a contract with the employee association (Jefferson County Teachers Association), setting policy for salaries, discipline, evaluation, work expectations, and transfer rights.

A unique aspect of JCPS includes a student assignment plan utilizing managed school choice that promotes racial/economic desegregation through providing transportation for students to schools within clusters of neighborhoods and to magnet schools (e.g., traditional, performing arts, self directed learning, math/science/ technology) within the county. Through implementation of the student assignment plan, the district set enrollment benchmarks of 15–50% diverse populations for schools. The diversity benchmarks were defined by the percentage of families living below the poverty level, the average educational attainment of adults, and the percent non-white in each census track. In 2010-2011, only 22 elementary, 7 middle, and 6 high schools met these benchmarks with regard to the percentage of F/R lunch enrollment, whereas, 47

elementary, 16 middle schools, and 13 high schools met the objectives for minority enrollment.

TELL Kentucky Survey

The Kentucky Department of Education administered the TELL Kentucky survey to all certified teachers in spring 2011 through the New Teacher Center. Teachers participated in the survey online (www.tellkentucky.org) with assurances of anonymity and encouragement from a coalition of state partners including the governor, Kentucky Department of Education, and the Kentucky Education Association. Of 6,921 educators in JCPS, 5,985 (86.48%) completed the survey.

The absence of school-level achievement data for 26 of the 28 schools designated as "special" resulted in the exclusion of their data in the study. Further, data from the two special schools with multi-level configurations (kindergarten-12th grade, 6th – 12th grade) were excluded. A minimum 49.5% response rate qualified a school's results for inclusion in state TELL data, eliminating 3 high schools, with return rates of 29%, 43%, and 48%, from the study. As a result, 128 schools, comprising of 89 elementary, 23 middle, and 16 high, provided both achievement and working conditions data for the study. The 128 schools participating in the study included 5,923 employees, of which, 5,308 completed the survey (89.6% return rate). Return rates for schools in the district are reported in Table 2.

Independent Variables

Researchers employed 10 independent variables for these statistical analyses. The first independent variable entered into regression models as a control variable was a school's percentage of students qualifying for the F/R lunch program. Results of the

TELL Kentucky survey provided the remainder of the independent variables. Respondents provided answers to 174 questions on the TELL Kentucky survey ranging from personal experience levels to information regarding teaching conditions at their current school. Teachers responded to 85 survey questions, which defined eight constructs that became independent variables, along with an overall working conditions variable (Table 3). The 89 questions not included in the study consisted of demographic or non-Likert items.

Table 2

TELL Response Rates By Level

Level	0-49%	50-59%	60-69%	70-79%	80-89%	90-99%	100%
Elementary	0	0	2	3	7	16	61
Middle	0	0	3	6	1	4	9
High	3	3	5	2	4	0	2
Special	3	4	2	1	5	1	10

In the TELL Kentucky survey, teachers responded on a 4 point Likert Scale [1 = Strongly Disagree (SD), 2= Disagree (D), 3= Agree (A), 4 = Strongly Agree (SA)], with an additional option of "Don't Know". All survey questions (Appendix A) within constructs were phrased in positive terms, thus no reversal of Likert responses was required. Many reviewed studies used the total percent agreement (% A + % SA) for each question to compare working conditions with achievement. In an effort to enhance the validity of results, we (researchers Conlon, Gallagher, & Hooper) used a weighted system with this study. For every participating school, we calculated an aggregated working conditions index for each question within a construct based on the following formula: $\text{Index}_{\text{Per Question}} = \{[(\%SD \times 1) + (\%D \times 2) + (\%A \times 3) + (\%SA \times 4)] / 100\}$. The working conditions index for each construct was determined by calculating the mean index of all questions within the construct. Recognizing the substantial difference

between a response of "Strongly Disagree" and "Strongly Agree", the weighted index accounted for this disparity and improved the accuracy of data.

Table 3

Independent / Control Variables of Study

Variable	Description
Time	Available time to plan, to collaborate, to provide instruction, and to eliminate barriers in order to maximize instructional time during the school day
Facilities and Resources	Availability of instructional, technology, office, communication, and school resources to teachers
Community Support and Involvement	Community and parent/guardian communication and influence in the school
Managing Student Conduct	Policies and practices to address student conduct issues and ensure a safe school environment
Teacher Leadership	Teacher involvement in decisions that impact classroom and school practices
School Leadership	The ability of school leadership to create trusting, supportive environments and address teacher concerns
Professional Development	Availability and quality of learning opportunities for educators to enhance their teaching
Instructional Practices and Support	Data and support available to teachers to improve instruction and student learning
Overall Working Conditions	Weighted mean response for following question of survey: "Overall my school is a good place to work and learn." ('North Carolina," 2010, p. 2)
% F/R Lunch	Percentage of students qualifying for the federal free/reduced lunch program at a school – measure of poverty

The New Teacher Center (2011) conducted a reliability analysis for all eight constructs within the 2011 TELL survey for Kentucky. The Cronbach alpha served as a measure of internal consistency within the set of survey items for each construct (Table 4). Due to the unavailability of data for test-retest calculations (1st administration of survey), split-half calculations were computed. A Cronbach's alpha greater than .7 demonstrated acceptable reliability.

Table 4

Reliability Statistics for Survey Constructs

Construct	Cronbach alpha
Time	.848
Facilities and Resources	.873
Community Support and Involvement	.897
Managing Student Conduct	.904
Teacher Leadership	.940
School Leadership	.946
Professional Development	.949
Instructional Practices and Support	.848

(adapted from "Validity and Reliability," 2011)

Dependent Variables

The 2010 and 2011 reading and math scores of the Kentucky Core Content Test (KCCT) comprised the dependent variables examined in the study. Based on the Kentucky Education Reform Act of 1990, legislators declared proficiency as the performance goal for all students. Soon after passage, education officials developed standards in all subject areas as a means to define proficiency. A series of state assessments then emerged from the Kentucky Department of Education, focused on determining if students performed at proficient levels. Students in grades 3-8, 10, and 11

participated in the KCCT annually in reading and mathematics through 2011. The KCCT reading/mathematics assessments consisted of multiple choice and open response items. Students received holistic scores in each subject area of novice, apprentice, proficient, and distinguished; with the designations of proficient/distinguished communicating the student met standard in that subject area.

We calculated the 2010 and 2011 mean percentages of proficient and distinguished students in reading and mathematics for each participating school as a means to evaluate the level of student achievement. This metric provided consistency with the focus upon reading and math achievement relative to NCLB and aligned with Kentucky Department of Education methods to track school progress, as well as identify persistently low achieving schools. Due to differences in KCCT scores between elementary, middle, and high schools, researchers used group mean centering to establish achievement indices. In order to align with current state practices, a school's achievement index was based on the mean percentages proficient and distinguished in reading and mathematics: {[(2011 % Prof + Dist Reading) + (2011 % Prof + Dist Math)] / 2}. The state mean proficient and distinguished in reading and math for the instructional level of the specific school was subtracted from this result. Each instructional level (elementary, middle, high) had a different value for the state mean proficient/distinguished in reading and math; therefore, group mean centering allowed for more valid data analysis. The difference of the school mean and state mean resulted in an achievement index for each school. The 2011 mean percent proficient and distinguished in reading and math provided the first dependent variable and the difference between the 2011 and 2010 scores supplied the basis for the second dependent variable.

Design

This correlational study (Creswell, 2008) sought to identify the association between teacher perceptions of working conditions with student achievement at schools in JCPS. Multiple linear regressions using a stepwise solution (Hinkle, Wiersma, and Jurs, 2003) to examine the relationship between the predictor variables (eight TELL Kentucky constructs, overall working conditions variable) and the criterion variables (2011 KCCT mean percent proficient and distinguished in reading and math, difference between 2011 and 2010 KCCT scores). The percent F/R lunch at each school was included as a control variable for the study.

The multiple linear regression for all schools in the sample determined the correlation (R) and coefficient of determination (R^2) between all independent variables and the dependent variable, the significance level of the association between the independent and dependent variables, and the standardized regression coefficients (Beta values) for each of the independent variables. The control variable, each school's percent F/R lunch, was entered as the first independent variable in one set of regressions as the means to control for poverty. Independent variables not contributing significantly to the regression equation were removed, using a stepwise solution.

Results from only elementary schools and schools in which the principal had served in that school for greater than two years were analyzed separately to provide an opportunity to compare groups. Insufficient for regression analysis, the number of middle schools (N=23) and high schools (N=16) prevented review of each instructional level individually. Study of regression coefficients for all schools and then elementary schools led to the comparison of differences between the associations at the elementary

level and the middle/high school levels collectively. Regressions for schools with principals greater than two years experience (N=106) reduced the statistical "noise" associated with principals new to a school.

The regression associating working conditions constructs with the difference between 2010 and 2011 KCCT scores provided data related to schools experiencing gain, no change, or decline in achievement. A 2010 KCCT index was calculated in the same way as the 2011 KCCT index, with the difference between 2010 and 2011 indices entered as the dependent variable. Again, middle and high school data was removed to explore differences between instructional levels. Also, through examination of regressions involving achievement growth (2011 scores – 2010 scores), schools with extended leadership experience potentially exhibited differences in associations.

Limitations

One validity threat to this study included the use of a survey to measure working conditions. Multiple measures would have resulted in improved evaluation of teacher working conditions, however the examination of TELL results provided adequate data for study due to the excellent return rate and the breadth of working conditions constructs assessed. The regression comparing TELL survey results with 2011 KCCT scores allowed for study of two events occurring within weeks of each other, controlling for the validity threat of time. A final limitation of the study included the use of no more than two years of achievement data, without regard to longer trends. Still, relating the independent and dependent variables for the current study necessitated the data collection within the shortest timeframe possible, due to the possible changing nature of working

conditions perceptions. Ideally, repeated administrations of the TELL survey, along with yearly achievement and F/R lunch data would enhance the validity of future studies.

External validity threats to the study included the caution of generalizing results to other school districts and states due to the use of a single district's data. Aspects unique to JCPS, such as serving as the only large urban school system in the state and the student assignment plan focused on enhancing school diversity, inhibit generalization without the inclusion of data from several districts. The use of common data (common definition of working conditions and common state assessments) from multiple states and districts of similar demographics would have provided a means for improved generalization; yet, such data was currently not available. Examination of building-level data between schools with similar demographics allows researchers to generalize within the district; however, with expansion of data across districts in Kentucky and other states, the potential for improved external validity exists. Regardless, examination of survey data for the district and achievement data for schools within this large, urban district brought valuable information for Kentucky.

Results/Analysis

Correlations

Considering the working conditions constructs in isolation, without the influence of poverty, findings substantiated a moderate to strong association between teacher working conditions and student achievement. As seen in Table 5, individual correlations between the independent variables and the 2011 KCCT scores revealed strong correlations with poverty (R = -.80), teacher perceptions of community support and involvement (R = .67), and the construct of managing student conduct (R = .61). A

moderate association emerged between a school's 2011 KCCT scores and teachers' overall perception of their school as a "good place to work and learn" (R=.49), with small, yet statistically significant correlations evident in the facilities and resources (R=.18), teacher leadership (R=.27), and school leadership constructs (R=.28).

Comparisons between correlations of K-12 schools and only elementary schools revealed small, but consistent differences, with the stronger association between working conditions and achievement at the elementary level. For example, in the community support and involvement construct, the correlation for all schools (R = .67) and the correlation for only elementary schools (R = .78) confirmed the R value for middle and high schools to be less than .67. The managing student conduct construct produced similar comparisons ($R_{\text{All Schools}} = .61$; $R_{\text{Elementary}} = .71$).

Further, the statistical "noise" associated with principals with less than two years experience at schools uncovered small differences in most correlations. Schools with more experienced principals produced associations at slightly higher levels. For all schools with the community support and involvement construct, R = .67, whereas the R value for schools with principal leadership greater than two years amounted to .71. One reason for this small difference pertains to the number of all schools (N=128) and the number of schools with principal leadership greater than two years (N=105). The impact on the correlations from the values of the 23 schools with new principals within a subset of 128 schools would be minimal, unless the data of those 23 schools were skewed from the mean.

Table 5

Correlations between Poverty and Working Conditions Constructs With Mean Proficient/Distinguished KCCT Scores

Independent Variable	All Schools K-12 (n=128)	Elem. Schools Only (n=90)	Schools With Principal Tenure > 2 yrs (n=106)	All Schools K-12 (n=128)	Elem. Schools Only (n=90)	Schools With Principal Tenure > 2 yrs (n=106)
	2011 Scores			2011-2010 Scores		
Poverty	-.80**	-.81**	-.82**	.21**	.15	.22*
Time	.24**	.24*	.28**	.34**	.26**	.36**
Facilities & Resources	.18*	.28**	.22*	.16*	.19*	.19*
Community Supp & Inv	.67**	.78**	.71**	-.12	-.01	-.09
Managing Stud Conduct	.61**	.71**	.64**	.17*	.23*	.17*
Teacher Leadership	.27**	.37**	.35**	.05	.07	.09
School Leadership	.28**	.39**	.36**	.05	.08	.11
Professional Development	.01	.19*	.05	.10	.13	.15
Instr Practices & Support	.12	.24*	.17*	.14	.13	.20*
Overall	.49**	.50**	.54**	.04	.05	.07

Note. * $p < .05$, one-tailed. ** $p < .01$, one-tailed.

However, within two constructs, teacher leadership and school leadership, the values of those 23 schools seemed to affect the correlations at a more substantial level.

In the teacher leadership construct, for all schools, R = .27, and the correlation for the schools with principals greater than two years equaled .35. Similarly, the R values in the school leadership construct changed from .28 to .36. In each construct, teacher perceptions of teacher leadership and school leadership at the 23 schools with new principals reduced the overall correlation of 128 schools by .08. This data suggested that as teachers transitioned to working with a new school leader, their perceptions of leadership became adversely affected, possibly due to either increased caution or distrust of new leadership, or apprehension to change.

Of particular interest, the direction of correlations between poverty levels with one-year achievement scores and poverty levels with achievement growth (difference in 2011 and 2010 KCCT scores) changed. Correlations for achievement growth between poverty and student achievement were positive, rather than the expected negative values (.21 for all schools, .15 for elementary schools, and .22 for schools with principals greater than two years), displaying inconsistency with the one-year achievement indices. A reason for this phenomenon may suggest that high poverty schools, with the greatest opportunity for growth, based on the strong negative correlations between poverty level and one-year achievement scores, exhibited stronger gains (although still below state averages) than schools with less poverty.

Examination of the association of achievement growth with the working conditions constructs revealed correlations of a smaller magnitude, ranging from .04 to .36 in all three models (Table 5). Time ($R_{\text{all schools}} = .34$), facilities and resources ($R_{\text{all schools}} = .16$), and managing student conduct ($R_{\text{all schools}} = .17$), produced statistically significant, yet small correlations across all three models. These results were possibly

due to large improvements in achievement occurring more often in schools with achievement scores well below the state mean. For example, a school with percentages of proficient and distinguished students more than 20 percentage points below the state mean had much more room for growth than a school with 20 percentage points above the state mean.

Perceptions of Working Conditions

Multiple linear regressions comparing TELL Kentucky constructs with student achievement using a stepwise solution examined the constructs collectively, without the inclusion of poverty (Table 6). A large effect size was identified with community support and involvement accounting for the majority of the variance in student achievement in the regression for all schools ($\acute{\omega}^2 = .66$, $R^2_{\text{comm support}} = .44$), only elementary schools ($\acute{\omega}^2 = .78$, $R^2_{\text{comm support}} = .61$), and schools with principal tenured greater than two years ($\acute{\omega}^2 = .70$, $R^2_{\text{comm support}} = .50$). For all K-12 schools and schools with principals tenured greater than two years, six of nine constructs contributed to the regression equation in a statistically significant manner. Of those six, however, the constructs of time, school leadership, and the "overall" variable contributed at most 3% to the change in R^2 in the stepwise solution. Teacher leadership, facilities and resources, and instructional practices and support provided no significant contribution to the regression.

At the elementary level, school leadership produced a large contribution to the regression equation ($R^2 = .12$). The negative coefficient for school leadership in this regression, as well as all other regressions without poverty ($\beta_{\text{all schools}} = -.35$, $\beta_{\text{elementary}} = -.51$, $\beta_{\text{principal} > 2 \text{ years}} = -.30$) indicated that as teacher perceptions of the quality of school

leadership decreased, achievement tended to increase. One reason for this may suggest that teachers of high achieving schools attribute student success to their work, rather than efforts from school leadership. In addition, value placed on administration and de-centralized decision-making showed less in higher achieving schools possibly due to the absence of urgency related to raising test scores. Another reason for these perceptions may emerge from sentiments of the teacher union, an essential promoter of the survey through the work of building representatives at each school.

Table 6

Multiple Linear Regression Using Stepwise Solution Associating Poverty and Working Conditions Constructs With 2011 Mean Proficient/Distinguished KCCT Scores

All Schools, K-12 Without Poverty (n=128)					All Schools, K-12 With Poverty Included (n=128)				
Predictors	R	R^2	ΔR^2	β	Predictors	R	R^2	ΔR^2	β
Com Support	.66	.44**	.44	.67**	Poverty	.80	.64**	.64	-.80**
Prof Dev	.71	.50**	.06	-.26**	Stud Conduct	.85	.72**	.07	.31**
Stud Conduct	.79	.62**	.12	.50**	School Lead	.86	.73**	.02	-.19**
Time	.80	.64**	.02	.20*	Time	.87	.75**	.02	.19**
School Lead	.81	.66**	.02	-.35**					
Overall	.83	.68**	.02	.28**					
Elementary Only Without Poverty (n=90)					Elementary Only With Poverty (n=90)				
Predictors	R	R^2	ΔR^2	β	Predictors	R	R^2	ΔR^2	β
Com Support	.78	.61**	.61	.78**	Poverty	.81	.66**	.66	-.81**
Stud Conduct	.82	.68**	.07	.35**	Stud Conduct	.89	.78**	.13	.41**
School Lead	.89	.79**	.12	-.51**	Teacher Lead	.90	.81**	.02	-.22**
					Time	.91	.82**	.01	.18*
					Com Support	.91	.83**	.01	.24*
Principals > 2 Years Without Poverty (n=106)					Principals > 2 Years With Poverty (n=106)				
Predictors	R	R^2	ΔR^2	β	Predictors	R	R^2	ΔR^2	β
Com Support	.71	.50**	.50	.71**	Poverty	.82	.68**	.68	-.82**
Stud Conduct	.75	.56**	.05	.30**	Stud Conduct	.86	.75**	.07	.30**
Prof Dev	.81	.65**	.09	-.35**	Time	.87	.76**	.01	.14*
Time	.82	.68**	.03	.23**	Prof Dev	.89	.78**	.03	-.23**
School Lead	.83	.69**	.02	-.30**					
Overall	.85	.72**	.03	.32**					

Note. *$p < .05$. **$p < .01$.

Similarly, in the area of professional development, the negative coefficient for all schools ($\beta = -.26$) and schools with principals greater than two years ($\beta = -.35$) conveyed that as teacher perceptions of the quality of professional development decreased, achievement increased. Perhaps the confidence resulting from teaching at a school with high student achievement affected perceptions that assistance in the area professional development was devalued. Teachers from high achieving schools seemed to hold different views related to the importance of job related training than teachers from low performing schools facing sanctions, and experiencing the urgency associated with increasing student achievement. An additional reason for these perceptions pertain the quality of professional development received by teachers in high achieving schools. The absence of urgency in raising student achievement possibly coincided in weak planning and substandard professional development activities. Although seemingly counter-intuitive, the negative coefficients in school leadership and professional development communicated teacher perceptions of a sense of autonomy and the absence of exigency related to raising student achievement in higher performing schools.

A second series of multiple linear regressions using poverty as the control variable and a stepwise solution for the TELL Kentucky constructs with the 2011 KCCT scores resulted in large effect sizes for poverty with all schools ($\acute{\omega}^2 = .74$), only elementary schools ($\acute{\omega}^2 = .82$), and schools with principals greater than two years ($\acute{\omega}^2 = .77$). With all independent variables considered collectively, a school's poverty level influenced student achievement to the greatest degree. Poverty and managing student conduct accounted for 72% of the variance in student achievement with 64% of that variance attributed to poverty (Table 6). At the elementary level, poverty and managing

student conduct accounted for 78% of the variance in student achievement. This difference inferred that the influence of poverty and student conduct affected achievement at the elementary level at higher levels than middle and high schools (R^2 for middle/high schools reduced R^2 for all schools from .78 to .72; $N_{elementary} > N_{middle + high}$; therefore $R^2_{middle/high} < .66$;). School leadership ($R^2 = .02$ for all schools), teacher leadership ($R^2 = .02$ for elementary schools) and professional development ($R^2 = .03$ for schools with principals greater than two years) all produced statistically significant negative coefficients, communicating an inverse relationship with achievement, similar to the regressions without poverty.

As noted previously, regressions without poverty at the elementary level resulted in school leadership accounting for 12% of the variance in student achievement. However, when school poverty levels were added to the regression equations, school leadership had no impact on the variance in student achievement for elementary schools. One potential reason for school leadership contributing to the regression equation in a significant manner without poverty and then disappearing when poverty levels were included in statistical analysis related to the gradual migration of educators to more affluent schools, with more inexperienced administrators and teachers typically serving in high poverty communities. The influence of poverty removed teacher perceptions of the impact of the school leadership construct on student achievement due to high poverty schools placing less value on school leadership. Absent in the regressions without poverty considered, the teacher leadership construct showed a small magnitude of significance for elementary schools ($R^2 = .02$), suggesting a perceived importance of teacher leadership within schools of greater poverty levels.

At the elementary level, the community support and involvement construct decreased from accounting for 61% of the variance in achievement without poverty levels, to only 1% with poverty included. Therefore, a school's level of poverty clearly accounted for variance in a way that removed virtually all of the predictive variance that had been in the influence of the community support and involvement construct. The perception of community support and involvement was not associated with school achievement beyond the influence of poverty.

In this study, teacher perceptions of community support appear to have been a function of the poverty level in a school. School poverty effectively removing the influence of community support and involvement in the regression equations suggest that teachers from schools with families of higher socio-economic status perceive stronger community support. If the community support and involvement construct had remained a significant influence on student achievement in the regressions that separated out the influence of poverty first, its strength would have prevailed in every school, no matter the poverty level. Unfortunately, increased school poverty levels eliminated the strength of teacher perceptions related to this construct on student achievement.

A key finding of the study related to the strength of the managing student conduct construct. Without the influence of poverty, the managing student conduct construct appeared in regression equations for all schools (R^2=.12), only elementary schools (R^2=.07) and schools with principals tenured greater than two years (R^2=.05). Unlike results with the community support and involvement construct, the managing student conduct construct contributed to the regression equations with poverty entered as a control variable in a statistically significant manner ($R^2_{\text{all schools}}$=.07, $R^2_{\text{elementary}}$=.13,

$R^2_{principal > 2yrs} = .07$). Teacher perceptions of the way a school handles student conduct associated with the achievement of students.

Based on these results, in schools where teachers perceived students knew and followed school rules, colleagues maintained consistency related to school discipline, administrators supported teacher efforts related to managing conduct, and the school environment was considered safe; student achievement increased. Although significantly less than the statistical power of poverty, the strength of the managing student conduct construct consistently appeared in all regressions, both with and without poverty. Of all the working conditions constructs, when including poverty, managing student conduct attributed to the variance in achievement the greatest degree. This data suggested that when teachers and school leaders effectively managed conduct, students learned at higher levels. Teachers perhaps felt they were able to provide more focus on instruction when dealing with discipline or safety issues was minimized. When students, teachers, and administrators were in agreement regarding the importance of maintaining student behavior, students learned at higher levels. Alternatively, the influence of school safety and student behavior upon the climate of a school led to coinciding changes in achievement. Maslow's hierarchy (1954) delineates that when students feel unsafe, motivation for learning is simply of less a priority. Schools with high levels of efficacy related to managing conduct and low levels of poverty produced the highest levels of student achievement.

In summary, of the findings from the study, four emerged as pertinent. First, examined in isolation without poverty, strong associations between student achievement and the teacher working conditions constructs of community support and involvement

and managing student conduct existed across the total sample of schools in JCPS and for schools with principal tenure greater than two years. The realistic strength of these associations was limited by the absence of consideration of school level poverty in the correlations. No differences were noted between schools experiencing growth, no change, or decline in achievement. Second, when included in regressions, school poverty associated with student achievement at high levels, controlling for as much as 68% of the variance in achievement. As school level poverty increased, student achievement decreased. Third, a large association appeared to exist between school poverty and the community involvement and support construct. When introduced in regressions as a control variable, poverty removed the significance of the community support and involvement construct, the dominant variable in regressions without poverty. This finding suggests that teachers of schools with more affluent families perceive stronger levels of community support. Fourth, a small association between the construct of managing student conduct and student achievement prevailed, even with poverty included in regressions. Teacher perceptions of safety and a school's ability to manage student behavior on the part of both teachers and administrators associated with student achievement.

Discussion

Of all the working conditions constructs, analysis of the association between managing student conduct and achievement leads to opportunities for school leaders to identify strategies for school improvement. Teachers responded to the following seven statements within the managing student conduct construct:

1. Students at this school understand expectations for their conduct.

2. Students at this school follow rules of conduct.
3. Policies and procedures about student conduct are clearly understood by the faculty.
4. School administrators consistently enforce rules for student conduct.
5. School administrators support teachers' efforts to maintain discipline in the classroom.
6. Teachers consistently enforce rules for student conduct.
7. The faculty work in a school environment that is safe. (www.tellkentucky.org)

Noting four of seven statements involve actions by adults in a school; stakeholders can analyze teacher responses to each statement within this construct in determining next steps for school improvement. Although addressing deportment serves as a common means for improving school climate (Kern & Manz, 2004), the specificity of questions from the TELL survey leads to an effective needs assessment and the strong association between this construct and achievement supports this emphasis. Finally, teacher perceptions of school administrator effectiveness were embedded within the statements of this construct, resulting in issues related to survey validity. For example, the question, "School administrators support teachers' efforts to maintain discipline in the classroom."), suggested that the assessment of managing student conduct also integrated teacher views of some aspects of school leadership.

This study added to the knowledge base through provision of an independent examination of the association between teacher working conditions and student achievement. Results from this study coincided with analysis completed by the New Teacher Center regarding the 2010 North Carolina Teacher Working Conditions Survey

and the 2009 TELL Maryland survey in that with constructs correlated separately, community support and involvement and managing student conduct were most associated with student achievement (Hirsch, Sioberg & Germuth, 2010; New Teacher Center, 2010). Although including poverty as one of several school factors considered, these studies did not partial out school poverty levels prior to examining the association between working conditions and student achievement. In Maryland, the inverse relationship between teacher perceptions of professional development and student achievement also became evident (Hirsch, Sioberg & Germuth, 2010). Further, professional development and instructional practices and support were not associated with student achievement in North Carolina, as seen in this study ("North Carolina", 2010).

Different in terms of constructs examined, achievement assessments administered, and statistical methods used, the current study supported findings establishing the existence of an association between managing student conduct with student achievement (Hirsch, 2005; Hirsch et al., 2006). This association, however, was limited extensively by the influence of poverty. Previous studies (Berry, et el., 2008; Hirsch, 3005; Hirsch, Sioberg & Germuth, 2010; "North Carolina", 2010) addressed the influence of poverty through correlations and the inclusion of poverty in regressions along with other school factors, however researchers did not partial out the poverty levels of schools prior to calculating the regressions. Finally, coinciding with the breadth of literature linking poverty with the achievement level of students (Borman & D'Agostino, 1996; Coleman et al., 1966; Guo, 1998; Puma et al. 1997), this study reaffirmed the well documented finding that school-level poverty impacts achievement.

This study leads to suggestions for future research related to teacher working conditions and student achievement. First, revisions to the working conditions surveys and the addition of other data collection methods (qualitative methods – case studies and interviews) should be considered in efforts to ameliorate the effects of poverty, while gathering valid working conditions data. Second, future research should involve expansion to other school districts within Kentucky. Although JCPS serves as the one, large, predominantly urban district in the state, other districts, smaller in size, but similar in characteristics offer options for comparison. Additionally, data from rural districts, as well as districts of varying size and demographics afford deeper study of the TELL Kentucky survey. Third, the gathering of longitudal working conditions and achievement data may allow for comparison of associations over time, while minimizing the influence of single events that potentially skew the perceptions of teachers completing the survey. Regarding achievement, the use of at least three data points (2009, 2010, and 2011) would strengthen statistical analysis. Fourth, the existence of common achievement assessments and common working conditions surveys across states would result in large scale, multi-state assessments that may enhance the validity of future research. Finally, a study examining the association between teacher working conditions and school poverty levels should follow based on the results of this study. Addressing the difficulties associated with teaching in high poverty schools potentially lead to strategies for policy makers to consider.

Based on study findings, rather than proclaiming, "teacher working conditions are student learning conditions" (Hirsch and Emerick, 2007), the message of this study seemed to convey that school poverty conditions are teacher working conditions. In

isolation, without the influence of school factors such as poverty, an inherent relationship between teacher working conditions and student achievement comes forth, exhibiting strong correlations in most working conditions constructs. Through entering school poverty levels into the regression equation first as a means to partial out the its effects, we found the strength the association between poverty and achievement to mask most of the working conditions constructs. For example, school results for the overall question, "Overall my school is a good place to work and learn," provided a moderate, .49 Pearson correlation with student achievement and appeared in small, yet statistically significant associations in two of three regressions without school poverty. School poverty, however, removed the overall question from the regression equations using the stepwise solution. These results were not consistent with expectations because we underestimated the full extent of the statistical power of poverty as it relates to student achievement. Teacher perceptions of their school being a good place to work and learn seems to be a function of a school's poverty level, along with the community support and involvement construct.

Policies related to needs assessments conducted by schools completing improvement plans should be adjusted to include consideration of elements within the managing student conduct construct. Managing student conduct displayed significant contributions to the regression equation in all regressions, including those with poverty. Analysis of this construct leads to improved use of data in decision-making. Teacher perceptions of the effectiveness in which student conduct is managed at a school supplies an additional, non-technical measure for schools to study in raising student achievement and meeting the demands of NCLB.

RELATIONSHIPS MATTER: AN EXPLORATORY SOCIAL NETWORK ANALYSIS OF THE ASSOCIATIONS AMONG SCHOOL LEADERSHIP, WORKING CONDITIONS, AND STUDENT ACHIEVEMENT

Almost three decades after the 1983 publication of *A Nation at Risk,* concerted efforts among school leaders and sundry stakeholders proceed in pursuing the challenging goal of improving student achievement for all students in American public schools. Emphasis on national standards and high stakes accountability to enhance educational attainment shape today's political and educational landscapes. Typically, a technical framework directs educational progress, usually targeting formal structures, processes, and accountability to improve student performance (Daly, 2009). In response to accountability pressures, school districts implement large numbers of policies (Mintrop & Trujillo, 2007). The implementation of federal policies and programs, such as the No Child Left Behind Act of 2001 (NCLB) and Race to the Top (RTTT), guide many districts' responses to the challenge of improving schooling for all students.

Overshadowed by the technical aspect of reform, social aspects germane to reform have been less often studied (Daly, 2009; Daly & Finnegan, 2010). A nexus to supporting ambitious educational reform goals necessitates building relationships to complement innovative programs (Mintrop & Trujillo, 2005). Rethinking reform and giving credence to the relevance of social capital may encourage school leaders to unearth untapped potential within schools by making social networks visible.

Supplementing the existing technical framework with the concept of social networks may give rise to a much needed promise in school reform efforts (Spillane, Reiser, & Gomez, 2006).

The purpose of this study was to determine whether the social capital of principals in four elementary public schools was associated with school working conditions and student achievement. The investigation used social network analysis (SNA) to study cohesion among schools' faculties and the principals' network location within the faculties. The researcher investigated the social capital of a principal using the following research questions:

1. Does the cohesion of a faculty network, as measured by density, vary depending on teacher working conditions and student achievement?
2. Does the principal's network location within a faculty, as measured by centrality, vary depending on teacher working conditions and student achievement?

Background

Advancement of the Role of the Principal

Education nests within the economic, political, and social environments (Labaree, 1997). Sizable shifts in any of these milieus attribute to traceable changes in education (Murphy, 1991). The *A Nation at Risk* report (1983) highlighted a sense of urgency to fundamentally improve education and set the stage for what was yet to occur. This heightened awareness for educational reform prompted a transformation in the role of the principal. As the accountability movement continued to gain momentum, the role of the principal minimized the function of a manager and underscored teaching by drawing

attention to the core technical work of curriculum and instruction (Spillane, Parise, and Serer, 2010).

In 1996, the Interstate School Leaders Licensure Consortium (ISLLC) revamped school administration in the U.S. The ISLLC standards strived to anchor the profession as the vocation headed into the 21st century (Council of Chief State School Officers, 1996). The explicit goal of emphasizing learning and teaching steered the conversion of principals from managers to learning leaders (Murphy, 2005). Although considered the most significant reshaping initiative for school leaders, critics described the ISLCC standards as ambiguous (English, 2000; Anderson, 2001). Anderson wrote, "I see the adoption of national standards as a missed opportunity for rethinking in fundamental ways what it means to be an educational leader" (p. 213).

A vast body of educational literature contains myriad of educational leadership definitions, including instructional leadership (Hallinger, 1992, 2005), transformational leadership (Bass, 1990; Leithwood, 1992), distributed leadership (Gronn, 2002; Spillane, 2005), shared leadership (Marks & Printy, 2003), moral leadership (Sergiovanni, 1992), and collaborative leadership (Hallinger & Heck, 2010). The complexity of school leadership precludes a single, universal definition of an educational leader capable of incorporating the multitude of leadership behaviors (Day, Harris, & Hadfield, 2001). Among the multiplicity of leadership behaviors, Cuban (1988) characterized political, managerial, and instructional roles as the bedrock to the principalship. Furthermore, he inferred that discovering a balance among these roles within a specific context holds the key to principal effectiveness.

Additionally, Leithwood, Louis, Anderson and Wahlstrom (2004) view successful school leadership as improbable in the absence of relationships. Leithwood, Harris, and Hopkins (2008) stated that nearly all effective leaders exploit the indistinguishable, customary scope of basic leadership practices. Principals also perform an instrumental function in cultivating and safeguarding trust (Bryk & Schneider, 2003). "Relational trust", coined by Bryk and Schneider (2003), imbues respect, personal regard, competence in core role responsibilities, and personal integrity.

> Principals establish both respect and personal regard when they acknowledge the vulnerabilities of others, actively listen to their concerns, and eschew arbitrary actions. Effective principals couple these behaviors with a compelling school vision and behavior that clearly seeks to advance the vision. This consistency between words and actions affirms their personal integrity. Then, if the principal competently manages basic day-to-day school affairs, an overall ethos conducive to the formation of trust will emerge (p. 43-44).

Defining Social Capital

Defining social capital seems as elusive as finding a single definition of an educational leader. In the most rudimentary terms, social capital pertains to the investment in social relations with the presumption that it will yield benefits to an individual or a group. Through these established relationships, individuals acquire access to resources embedded in a social network. Two prominent contemporary authors of social capital, Bourdieu (1986) with the creation of cultural capital and Coleman (1988) with the conception of human capital, led other theorists to study social capital. More recent social capital theorists focus on different facets of social capital as a way to gain insight to the

nuances of the concept. Such social capital attributes include consequences of social capital (Portes, 1998), intellectual capital (Nahapiet & Ghoshal, 1998), "appropriability" (Adler & Kwon, 2002), and civic participation (Putnam, 1995).

In spite of the progression of these views, the basic premise behind social capital assumes that the amount of social capital a person acquires through social connections with other individuals presents opportunities and limitations to accomplishments (Bourdieu, , 1986; Lin, 1999). Social capital also underscores the significance of the quantity of these connections, identified as structural social capital, and the quality of these connections, recognized as relational social capital (Bourdieu, 1986; Coleman, 1988, 1990; Lin, 2009). Social capital exemplified by strong structural and high relational bonds enhances opportunities for achievement. In contrast, social capital characterized by weak structural and low relational bonds hinders opportunities towards achievement. Likewise, social capital typified by strong structural, yet low or misguided relational bonds inhibits opportunity.

Besides the structural and relational aspects of social capital, resources embedded in social networks represent another significant facet of social capital (Lin, Ensel, & Vaughn, 1981). Lin (1999) offered three explanations as to why embedded resources prove advantageous. One, embedded resources in social networks assists the flow of information. Two, social ties may wield influence on individuals engaged in decision making involving others. Three, social relations strengthen solidarity. Furthermore, accompanying these benefits of social capital entails costs. (Adler & Kwon, 2002, Portes, 1998, and Nahapiet, J., & Ghoshal, 1998).

Moreover, social interactions establish shared norms creating an ethos in which to attain social capital benefits, (Adler & Kwon, 2002). Nahapiet & Ghoshal (1998) characterized trust as a crucial affective norm among groups of people. Tschannen-Moran and Hoy (2000) advocated that, "Trust is pivotal in the effort to improve education. And yet, trust seems ever more difficult to achieve and maintain" (p. 550). One caveat to building trust, involves time, a key ingredient to developing social relationships. Consequently, a lack of trust elicits a critical barrier to school reform. Ultimately, the structure of social ties and the quality of these ties as manifested in trust (Daly, 2010), may dictate the form, flow, and the realization of any reform strategy (Spillane, Reiser, & Gomez, 2006).

Using Social Network Analysis to Measure Social Capital

The underpinning of the concept of social networks is social capital. Social capital studies seek to explain variations in progress as a function of social ties. Social network analysis (SNA) provides a distinctive research perspective that accentuates the interdependency of relationships in a network (Scott, 2000). Burt (1980) described SNA as a loose alliance of approaches designed to increase an understanding of the network in terms of a system. This intrinsically interdisciplinary technique emerged from the pioneering work of sociologists, social psychologists, and anthropologists in the early to mid 1900s (Wasserman & Faust, 1994).

SNA refers to not only a perspective but also a methodology. Wasserman and Faust (1994) characterized SNA by the following tenets: (a) actors are interdependent; (b) ties between and among actors illustrate paths for transferring resources; (c) network structures can promote or inhibit opportunities for individuals within the network; and (d) network models view structures as blueprints of relationships. In addition, three key

features comprise a social network (Marsden, 1990). First, networks have boundaries. Second, an actor in a network has either a direct or an indirect connection to at least one other actor in the network. Ties, called "edges", link networks made up of people called "nodes". Third, different levels of analysis cast light from an alternative perspective.

Social network analysis (SNA) characteristically focuses on two social networks: instrumental networks and expressive networks. Instrumental networks consist of routes portraying technical relationships to diffuse information and resources in order to achieve organizational goals. Expressive networks pertain to pathways of social relationships concerning affective behavior involving trust. Typically, these two networks within an organization intertwine (Borgatti & Foster, 2003). A range of resources flows through these relational linkages associated with work and personal related issues, (Ibarra 1993). Additionally, social networks dictate direction of information as well as determine to which actors have access to that relational resource (Lin, Ensel, & Vaughn 1981).

Two customary network measurements are density and centrality. Density depicts a general level of cohesion within a whole network and is measured by the number of ties divided by the total number of possible ties within the network. The precise term of operationalization allows one to examine the qualities of the network holistically. For instance, weak ties among colleagues indicate less cohesiveness and strong ties suggest more cohesiveness (Moolenaar, Daly, & Sleegers, 2010). Therefore, density acts as an indicator of the faculty's cohesiveness, one of the benefits of social capital.

Centrality denotes the level of cohesiveness in an ego network, or the principal's network location, and is measured by the average number of ties the principal of each

school has with his/her staff. Degree centrality calculates the principals' direct relationships to teachers. In-degree centrality denotes whether the principal is considered giving the best instructional and personal advice, and therefore is considered most influential. Out-degree centrality describes which the principal solicits from others the best instructional and personal advice, thus denoting a level of vulnerability. In addition, degree centrality reveals the level of success each principal exhibits at developing ties among other individuals. Therefore, degree centrality acts as an indicator of the principals' influence among teachers, another benefit of social capital. The higher the principals' degree centrality, the more they are selected as a valuable resource in the network (Moolenaar, et al., 2010).

Applying Social Network Analysis to the Social Capital of a Leader

The application of SNA ensued in many fields of basic social science research. In the 1990s network theories appeared in practically all conventional areas of organizational research. Social capital promised to draw together an array of research relating a person's network position to significant outcomes, such as employment (Fernandez, Castilla & Moore, 2000), entrepreneurship (Baron & Markman, 2003; Renzulli, Aldrich & Moody, 2000; Shane & Stuart, 2002), individual performance (Sparrowe, Liden, Wayne & Kraimer, 2001), mobility (Boxman, De Graaf & Flap, 1991; Burt, 1997; Seibert, Kraimer & Liden, 2001), and power (Brass & Burkhardt, 1993; Kilduff & Krackhardt, 1994). In addition, as a means to augment traditional leadership behavior research, organizational literature in the area of business management focused on leadership effectiveness by analyzing leaders' positions in social networks (Balkundi

& Harrison, 2006; Balkundi & Kilduff, 2005; Kilduff & Krackhardt, 2008; Mehra, Dixon, Brass & Robertson, 2006; Sparrowe & Liden, 1997).

Resembling the business prototype, nascent educational literature began investigating leaders' positions within social networks as a strategy to school improvement. Several empirical studies exclusively investigated the social networks of school leaders and determined how school leaders' networks either improved or constrained educational advancement (Friedkin & Slater, 1994; Hite, Williams, and Baugh, 2005; Daly and Finnegan, 2010; Moolenaar, et al., 2010). Utilizing quantitative methods, Friedkin and Slater (1994) deduced that principals' advice centrality attributed to cultivating teachers' network cohesion and school performance. Hite, Williams & Baugh (2005) also examined school leaders' networks using social network theory, but employed qualitative methods. The researchers determined that through relationships administrators built four different types of networks: the innovation network, the resource network, the social/emotional support network, and the university–school partnership network. School leaders sought the assistance of one of these networks depending on the specific objective intending to accomplish. Although these networks depicted the ability to enhance progress, Finnegan and Daly (2010) concluded that relationships can also obstruct outcomes. Their results pointed to less dense connections among and between school leaders and district leaders. Consequently, these scant ties hampered the exchange of complex information and ultimately inhibited reform efforts.

Another study performed by Daly and colleagues (Moolenaar, et al., 2010) exemplified the positive impact of principals' positions on their schools' innovative climate. The more teachers sought after the professional and personal advice of

principals, the connectivity between teachers and principals increased. In returnx cohesion encouraged a teacher willingness to invest in reforming teacher practices and crafting new knowledge.

Of particular interest to school leaders, Coburn and Russell (2008) suggested four main benefits for studying social capital as related to school network structures. First, studying faculty networks can help enhance the knowledge concerning the informal structures of school organizations. Second, network analyses can create measures to assist in providing explanations concerning changes in teachers' attitudes and behavior. Third, network data can provide practical information to policy makers and school leaders about the success of initiatives designed to encourage collaboration in schools. Four, network analyses can help assess and improve initiatives intended to enhance instruction through the use of formal and informal leaders.

Associations Among School Leadership, School Climate, and Student Achievement

The actions and behaviors of a principal shape the climate of a school. Wiggins (1972) analyzed the behavior of an elementary school principal and determined a significant relationship between the principal's interpersonal abilities and the school climate. As the principal's tenure increased, the significance of the relationship between the principals' behaviors and actions and the school climate also increased. Heck (2000) suggested an association between a positive school climate and a more supportive and directed principal in terms of instructional quality. A school led by a strong instructional principal "produced greater-than-expected improvements in student learning over time" (p. 538-539). Kelley, Thornton, and Daughtry (2005) found that principals have the "power, authority, and position" to influence school climate. Accomplished principals

promoted effective feedback by developing mutual trust, open communications, and collegiality. Many principals, however, received insufficient feedback to improve toward becoming highly skilled educators.

Just as the behavior and actions of a principal shape the school climate, so too do the behaviors and actions of a principal influence student learning. Globally researchers contributed to the educational literature examining the relationship between school leadership and student outcomes, including North America (Bossert, Dwyer, Rowan, and Lee, 1982; Hallinger and Heck, 1996; Marks and Printy, 2003; Wiley, 2001) Europe (Witziers, Bosker, & Kruger, 2003), and Asia Pacific (Robinson, Lloyd, & Rowe, 2008). Collectively, these studies maintained that leadership impacts student learning by means of school capacity.

Robinson, Lloyd, and Rowe (2008) completed a meta-analysis on studies offering evidence about the connection between leadership and student outcomes. Qualitative findings of indirect effects of leadership on student academic outcomes significantly differed from the results of quantitative data. For example, Witziers, Bosker and Kruger (2003) conducted a qualitative meta-analysis of 37 multinational studies of direct leadership effect on student outcomes and reported an average effect of 0.02, indicating a very weak impact. Marzano, Waters, and McNulty (2005), however, gave a quantitative account of direct leadership effect on student outcomes and determined an average effect of approximately 0.4 between leadership and student academic outcomes. More emphatically, apart from the difference in effect size, the results of school leadership are significant. In fact, Leithwood, Louis, Anderson, and Wahlstrom (2004) asserted that the impact of the principal on student learning ranks second only to teaching.

In spite of an abundance of literature associating school leadership with school climate and student achievement, educators continue to wrestle with how to improve American public schools. In 2006, 26 percent of schools failed to make adequate yearly progress (AYP) as defined by their states' departments of education. By 2010, 38 percent of schools, a nine percent increase, failed to make AYP. Most recently, in 2011, 48 percent, nearly half of America's public schools, failed to meet standards as measured by AYP under the No Child Left Behind Act of 2001. This was the highest percentage in student failure since the implementation of the policy in 2001 (Usher, 2011). These sobering statistics provide a compelling motive to explore the notion that strong, high quality interpersonal relationships derived from trust, support student achievement.

Methods

Sampling Procedures

This study used purposive sampling (Creswell, 2008) to strategically select four elementary schools (N = 4) from within one large urban district. The district includes 90 elementary schools, including one K-12 school. A scatter plot was created to assist in determining the four schools that provided insight into the social capital of a school leader. Results from the Kentucky Teaching, Empowering, Leading, and Learning (TELL) survey and the 2011 reading and math scores of the Kentucky Core Content Test (KCCT) comprised the measures used to select the schools.

The 2011 KCCT in reading and mathematics was used to measure academic achievement. Students in grades three, four, and five were assessed in these two content areas. Each test included multiple choice and open response items. Students were assessed holistically and assigned a score of novice, apprentice, proficient, and

distinguished in each of the core content areas. The designations of proficient/distinguished denoted that the student met the standard in that content area. Table 7 features the combined 2011 percentages of proficient and distinguished students in reading and mathematics in grades 3, 4, and 5. The achievement scores were as follows: School LL (low working conditions/low achievement) – 46.08%, School HL (high working conditions/low achievement) – 55.07%, School LH (low working conditions/high achievement) – 74.47%, School HH (high working conditions/high achievement) – 78.77%. The combined 2011 mean percentages of proficient and distinguished students in reading and mathematics combined for all 90 elementary schools in the district was calculated as a means to evaluate the level of student achievement.

Table 7

Mean KCCT and Working Condition

	School HH	School LH	School HL	School LL
Student Achievement	78.77	74.47	55.07	46.08
Working Conditions	91.0	61.0	95.0	39.0

The Kentucky TELL Survey was used to measure working conditions. The Kentucky Department of Education (KDE), contracted with New Teacher Center (NTC), a nonprofit organization dedicated to supporting the development of a high-quality teaching force, to administer the TELL survey to Kentucky educators. A coalition of diverse stakeholders and policy makers of education organizations supported the initiative. Moreover, the TELL survey was the first statewide opportunity for all Kentucky school based educators to provide input on teaching conditions.

Kentucky certified teachers responded to the anonymous, on-line, statewide survey in the spring of 2011. Teachers responded on a 4 point Likert Scale (strongly agree, agree, disagree, strongly disagree), with an additional option of 'don't know'. A minimum 49.5% response rate and 5 respondents qualified a school's results for inclusion in state TELL data. Three of the four schools selected for this study had a response rate to the survey of 100%.The fourth school selected had a response rate of 97.87%. The high participation rate communicates that the results of the survey reflect the opinions of teachers at that point in time. The TELL question stating "Overall, my school is a good place to work and learn" was used to assign a working condition score to each school. The percentage scores for this question combined the agree responses and strongly agree responses, which were as follows: School LL – 39 %, School HL– 95 %, School LH – 61 %, School HH – 91 % (Table 7). The scores for Jefferson County, 82.4 %, and Kentucky, 84.4% assisted as benchmarks.

In addition to plotting the 90 schools on a scatter plot using working conditions and academic achievement as the two variables, the graph was also divided into four quadrants and labeled as follows: quadrant I - (HH), quadrant II - (HL), quadrant III - (LL), and quadrant IV - (LH). After plotting the 90 schools, the graph revealed the following number of schools located in each quadrant: quadrant I: HH - 31, quadrant II: HL - 8, quadrant III: LL - 26, and quadrant IV: LH - 25 (Figure 1). Next, one school from each of the four quadrants was selected using the following criteria. First, the schools selected needed a comparable number of certified faculty. The selected schools ranged from 30-42 certified staff members Second, the principals required at least two full years of administrative experience at current school in order for the TELL survey to reflect time under their leadership. Third, schools, such as magnet schools and

traditional schools, which select many or all students enrolled, were excluded from selection in order to circumvent the issue concerning a discrepancy in student achievement scores. Fourth, an effort was made to select an outlier in each of the four quadrants. Fifth, of these outliers, an effort was made to consider the schools' similarities in contextual variables. These contextual variables included: special programming (English as a Second Language and Special Education) and the student background (ethnicity and free and reduced lunch), and student stability index.

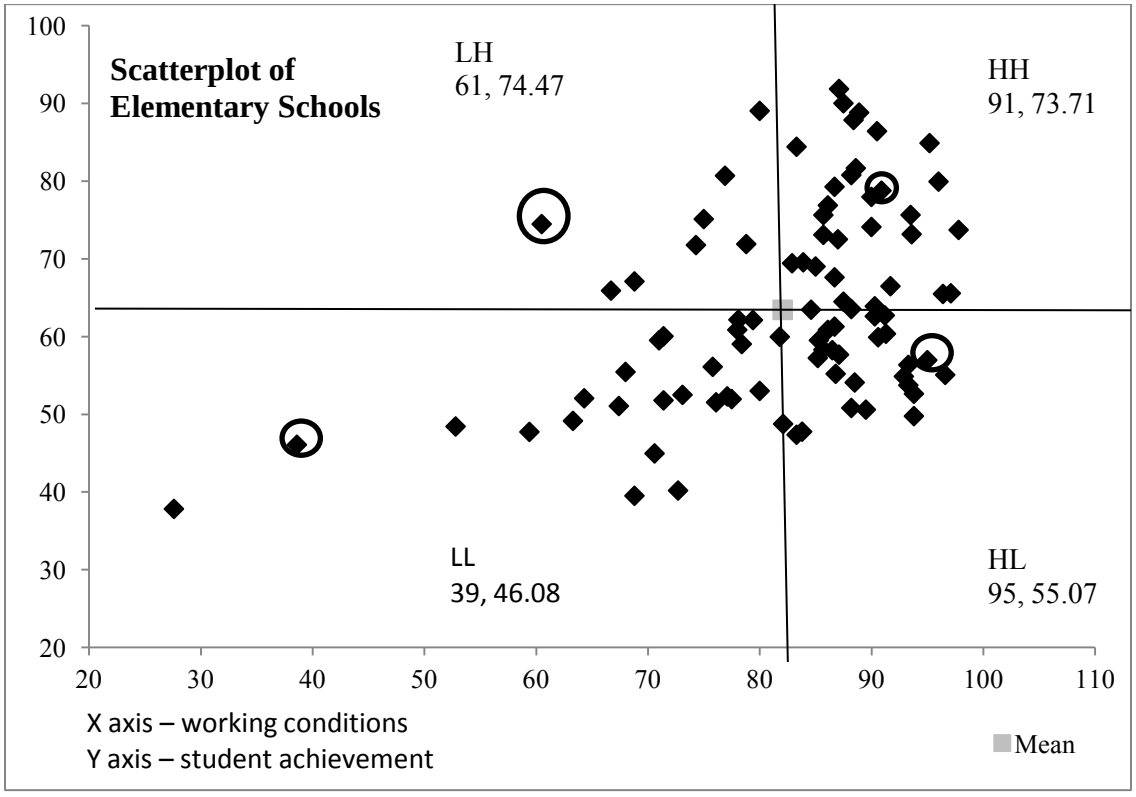


Figure 1. Scatterplot of Elementary Schools based on Working Conditions and Student Achievement

Participants

We secured permission from each principal of the schools selected to participate in the study. The four selected schools were considered large elementary schools with a student enrollment over 500. As shown in Table 8, free and reduced lunch ranged from

34.7 % to 93.1 %. In addition, the percent of student ethnicity, defined as not white ranged from 32.7% to 60.7 %. All four schools had special education programs, and the percent of student that made up this sample was consistent in each of the schools ranging from 10.9 – 16.4 %. Two of the four schools, School LL and School HH, however, do not have English as a Second Language (ESL) programs. Student transiency, measured by the stability index, varied from 81.6 to 91.4 in the four schools. One-year teacher retention ranged from 91.9 to 100 %. The percent of teachers with a Masters Degree or higher varied from 81.1 – 100 %.

Table 8

School Demographics

	School HH	School LH	School HL	School LL
School Enrollment	516	565	611	700
Faculty Size	28	34	29	38
% Master's Degree +	100	97	79	81
% Teacher Retention	96	97	100	92
% Special Education	15	14	11	16
% White	61	43	47	33
# English as 2nd Lang.	N/A	109	22	N/A
Stability Index	91	89	84	82
% Free Reduced Lunch	35	78	77	93

Participants from the selected schools involved all full-time certified staff. The district did not have assistant principals at the elementary level, and the counselors are considered teachers according to the state's revised statutes. Excluded from the study were classified staff, such as teaching assistants, who did not participate in the TELL survey, and part-time employees.

Instrument

The survey for this study consisted of three stem questions to elicit information. Two subject-specific questions, one relating to literacy and one to mathematics, were developed to solicit advice-seeking information pertaining to instruction. The underlying principle for including these two questions was to correspond to the KCCT subject matter used to measure student achievement for mapping schools. In addition, the two subject-specific questions were incorporated to recognize the importance of instruction among school leadership (Pitts & Spillane, 2009). The third question related to speaking candidly, which requested general advice information. The reasoning for including the personal advice question was to reflect the significance of trustworthiness, which influences working conditions. The three questions, consisting of two work related advice questions and one personal advice question were as follows:

1. Who do you turn to for advice about literacy strategies and content?
2. Who do you turn to for advice about mathematics strategies and content? (If the respondent does not teach math, then an alternative question is asked. During this school year, to whom have you turned to for advice about mathematics as it relates to your classroom teaching?)
3. Who do you turn to advice or information about personal matters?

The survey was furnished to a bounded sample made up of certified staff. The respondents completed the survey by checking the names of each staff member applicable to each question using an alphabetized roster of certified staff. Two advantages existed in utilizing a roster. One advantage pertained to the simplicity in using the roster. The second advantage involved minimizing false negatives by

forgetting the names of faculty members (Butts, 2008). In addition, the survey also asked the respondent to indicate how influential each interaction was by using the following options: little (L), moderate (M), and significant (S). Inquiring about the importance of the interactions assisted in determining the strengths of the ties. In return, the strength of the ties illustrates the quality of the tie. The respondents received a blank envelope in which to place their completed survey when turning in, thus furthering teachers' confidence in the anonymity of their responses.

Data Collection

The researcher acquired permission of the school principals to attend a scheduled faculty meeting at each of the schools to administer a short, paper-based survey. Faculty meetings were typically an established norm for this district, and certified staff was contractually required to attend these scheduled weekly meetings. Approximately fifteen minutes were needed at the faculty meeting to briefly explain the study, obtain consent from participants and complete survey. Any faculty member absent from the faculty meeting obtained a second opportunity to participate in the study by receiving the material through the mail.

Response rate from the data collected among the K-5 full-time certified staff in each of the four elementary schools was as follows: School HH – 97 %, School LH – 89 %, School HL – 86 %, and School LL - 65 %. Although the accuracy of describing a complete social network increases as the response rate approaches 100%, the average response rate of 80% is considered acceptable (Sparrowe, Liden, Wayne, & Kraimer, 1997). Despite our efforts to acquire a minimum of 80% rate of return from each school, School LL failed to meet the minimum rate of return. Nevertheless, we generated data

from the completed surveys of participants to compensate for missing surveys. The information gathered from the survey allowed for the operationalization of ties among the faculty in each school.

Measurements

Unlike true experiments, a gold standard for determining a significant difference between network measurements does not exist in social network analysis (Wasserman and Faust, 1999). Nevertheless, for the purpose of our study, we used two complementary network measurements, density and centrality, to estimate the difference in cohesion of networks in four elementary schools. Density depicts a general level of cohesion within a whole network and is measured by the number of ties divided by the total number of possible ties within the network. Centrality denotes the level of cohesion in an ego network, in other words the principal's network location, and is measured by the average number of ties the principal of each school has with his/her staff. Degree centrality calculates the principals' direct relationships to teachers. In-degree centrality denotes whether the principal is considered giving the best instructional and personal advice, and therefore is considered most influential. These network measurements provide a common standard to make comparisons systematically among the four schools. Moreover, using the percentage difference of these two measurements also permitted us to make comparisons between networks of four schools varying in number of faculty members.

Analytic Procedure

This study focused on two levels of analysis, structural and node levels. The structural level of analysis (n = 145) examined the ties between all the certified staff in

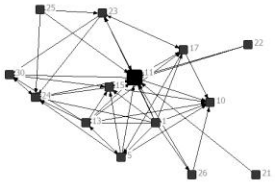
the four schools. The node level of analysis (n = 4) studied the principal's ties with the faculty. UCINET software (Borgatti, Everett & Freeman, 2002) was used to analyze the structure and processes of the school network as it related to density and centrality. NetDraw (Borgatti, 2002) created a visual representation, called a sociogram to analyze the expressed network measures. Unlike organizational flow charts, which outline formal relationships within an organization, sociograms portray the informal relationships that are ubiquitous to an organization, yet invisible. The solid, dark circles are called nodes, and each node represents a full-time certified faculty member. The lines connecting the nodes are called edges and denote a relationship between a pair of nodes. A node not linked to any other node, called an isolate, represents faculty members who neither seek nor give instructional or personal advice to any other faculty member. A pendant defines a node that has only one tie to another node.

Results and Analysis

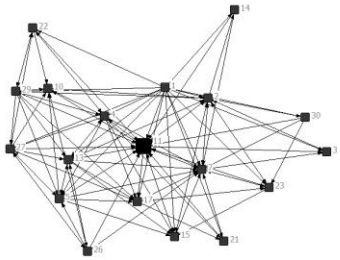
Principal Centrality and Density of the Instrumental Networks

Centrality was the selected network measurement used to analyze the principal's network location of two instrumental networks, advice in math and advice in literacy. Figure 2 shows visual representations, called sociograms, of the two instrumental networks for each school. The same information is also found in Table 9. First, advice in literacy depicted principal centrality varied from 19% to 63 %. Second, principal centrality of the nodes in each of the ego networks pertaining to the advice in math varied from 17% to 47.

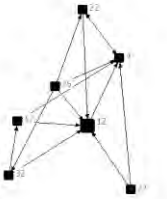
Density was the preferred network measurement used to calculate the faculty's cohesiveness of the same two instrumental networks, advice in math and literacy (Table 10). Figure 3 shows the information found in Table 10 converted into visual



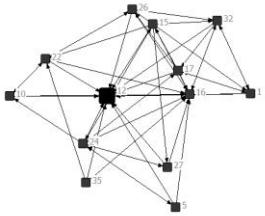
Ego Network-Advice in Math School HH



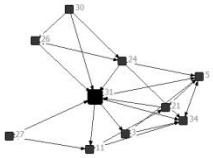
Ego Network-Advice in Literacy School HH



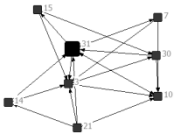
Ego Network-Advice in Math School LH



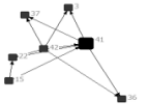
Ego Network-Advice in Literacy School LH



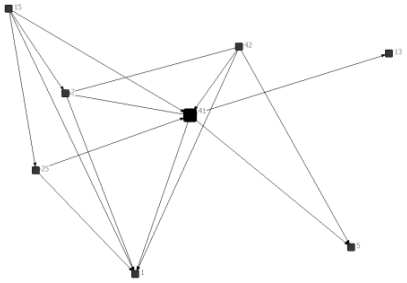
Ego Network-Advice in Math School HL



Ego Network-Advice in Literacy School HL



Ego Network-Advice in Math School LL



Ego Network-Advice in Literacy School LL

Figure 2. Instrumental Networks of the Ego Networks

Table 9

Principal Centrality Percentages of the Instrumental Networks in Each School

	School HH	School LH	School HL	School LL
Literacy	63	35	22	19
Math	47	19	28	17

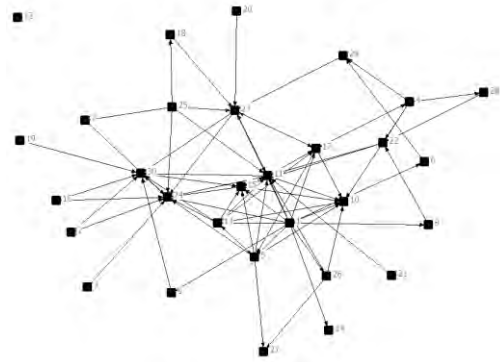
representations. First, the density of the network associated with advice in literacy varied from 6% to 17%. Second, density varied from 5% to 9% of the total possible ties pertaining to advice in math network. Third, density concerning speaking candidly network varied from 9% to 17%. Figure 3 provides a visual representation, called a sociogram, depicting the information in Table 10.

Table 10

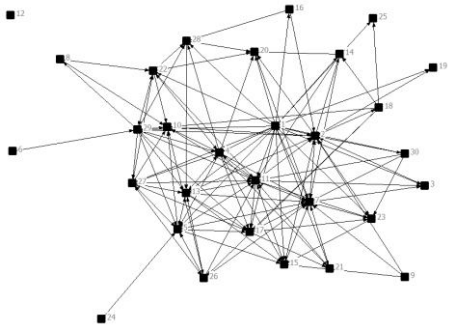
Density Percentages of the Instrumental Networks in Each School

	School HH	School LH	School HL	School LL
Literacy	17	12	10	6
Math	9	6	7	5

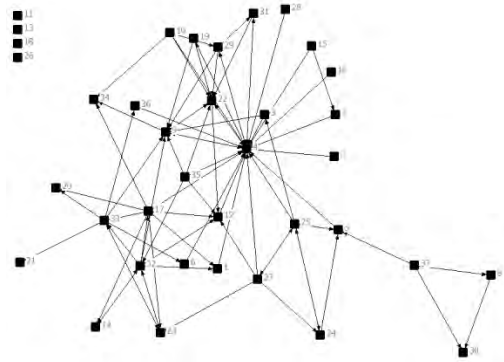
Findings indicated principal network location and related to the instrumental network related to advice in literacy was associated with school working conditions and student achievement in each of the four schools. A school with a principal network having higher percentage of literacy ties indicated higher levels in student achievement. In addition, a school with a faculty network having higher percentage of literacy ties indicated higher levels in student achievement. Furthermore, the principal network of school HH was



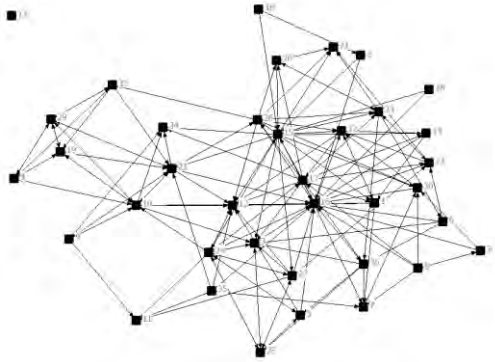
Whole Network-Advice in Math School HH



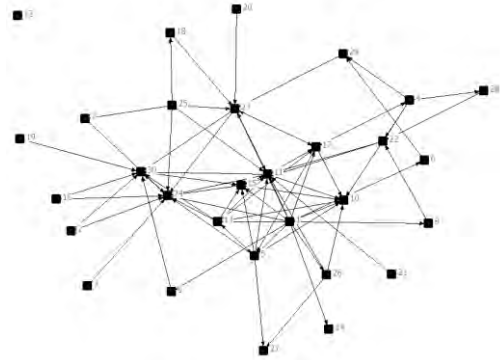
Whole Network-Advice in Literacy School HH



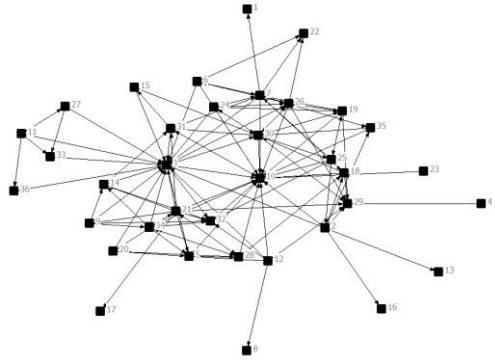
Whole Network-Advice in Math School LH



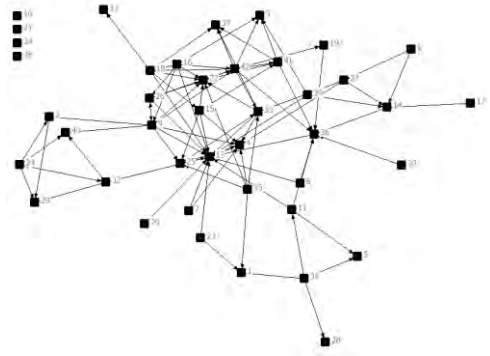
Whole Network-Advice in Literacy School LH



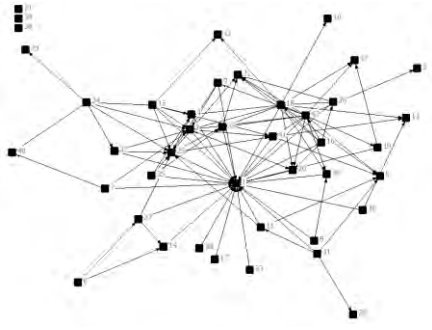
Whole Network-Advice in Math School HL



Whole Network-Advice in Literacy School HL



Whole Network-Advice in Math School LL



Whole Network-Advice in Literacy School LL

Figure 3 Instrumental Networks of Whole Networks

generally three times denser than schools HL and LL and nearly two times denser than school LH. The whole network of school HH also contained nearly three times (17%) as many literacy ties as School LL (6%), and school LH presented twice (12%) as many literacy ties as School LL. Reagans and Zuckerman (2001) concluded that organizations with dense connections typically outperform organizations with sparse network structures. Possible explanations may include the type of information and the speed in which resources travel through a dense network. Dense networks may move complex resources as a way to support improvement (Nahapiet & Ghoshal, 1998 and Tsai, 2002). In addition, Scott (2000) determined that a high percentage of relationships may transfer resources more expeditiously than a network with sparse ties (Scott, 2000).

Two additional findings were uncovered concerning the cohesiveness of the faculty networks in advice in literacy as measured by density. The faculty networks illustrate a higher density in literacy networks compared to each of the school's math networks. Schools HH and LH schools had approximately twice as many literacy ties as the schools' math ties, unlike schools HL and LL. Denser literacy networks may suggest that elementary teachers appear more willing to seek advice about literacy than math. Spillane (2005) substantiated the finding that teachers are more inclined to seek advice about literacy. In addition, Daly (2011) suggested that collective efficacy beliefs are potentially subject related.

The second finding concerning the cohesiveness of the faculty networks in advice in literacy was related to the number of ties associated with a particular node. Numerous teachers in the schools studied sought advice in literacy from either one or two faculty members. Spillane (2005) suggested that an individual may be considered an

instructional leader if many individuals seek out this individual for instructional purposes. Figure 4 depicts the informal leaders in school LL and school HH. Informal leaders associated with School LL include LL_1-1, LL_2-2, and LL_3-25. In contrast, the faculty of school HH sought not only advice in literacy from the principal, but also a multitude of informal leaders represented by HH_1-2, HH_2-4, HH_3-5, HH_4-7, HH_5-10, HH_6-13, HH_7-17.

Spillane (2005) offered two implications. One, Spillane demonstrated the idea that advice givers were specific to literacy. Two, informal leaders outside the realm of the school organizational chart may be strategic to school improvement. Moreover, Pescocolido (2001) revealed that informal leaders influenced team efficacy, which impacts team performance (Barsade, 2002; Gibson & Vermeulen, 2003). However, for principals to empower teachers to lead and assume ownership in decision making may involve an understanding of perceptions between principals and school faculty (Daly, 2009). A mutual awareness of perception may assist in discovering the "right person with the right connection at the right place" to facilitate the transference of complex information (Reagans & McEvily, 2003).

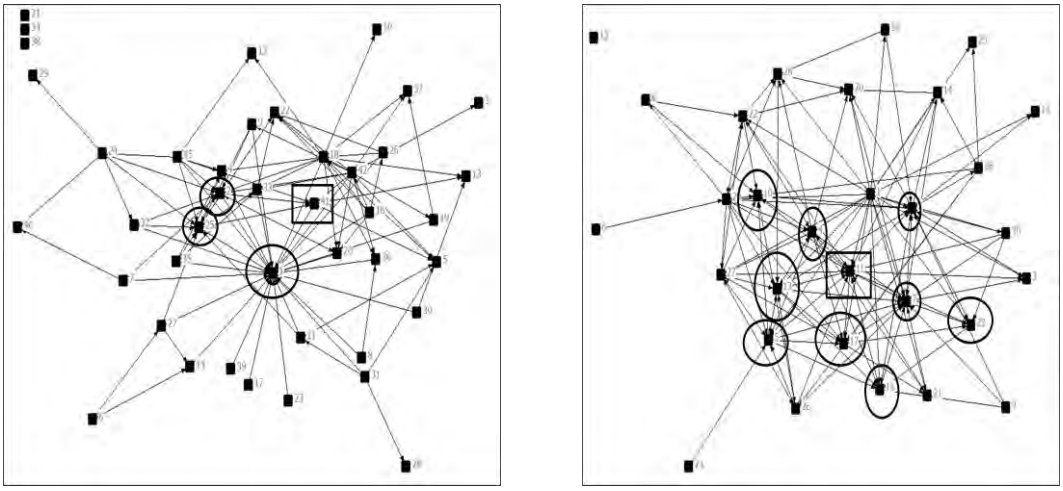


Figure 4. Advice in Literacy in the Whole Networks for Schools LL and School HH

Principal Centrality and Density of the Expressive Networks

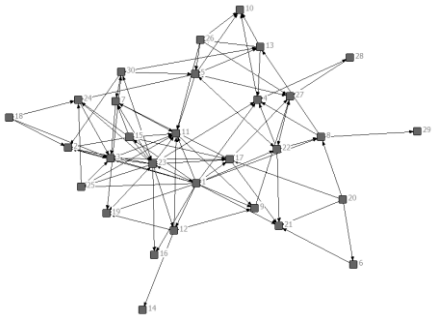
Centrality was again the selected network measurement used to analyze the principal's network location of the one expressive network, speaking candidly, which is associated with trustworthiness (Table 11). Figure 5 shows the sociograms associated with the information in Table 11. Principal centrality associated with speaking candidly varied from 24% to 43%. Density was also the preferred network measurement used to calculate the cohesiveness of the expressive network, speaking candidly. The range of the whole networks varied from 9% to 17%.

Table 11

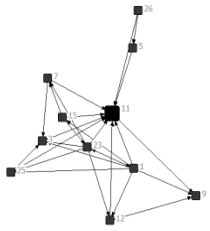
Principal Centrality and Density Percentages of the Expressive Networks in Each School

	School HH	School LH	School HL	School LL
Ego Network	37	24	25	43
Whole Network	11	13	17	9

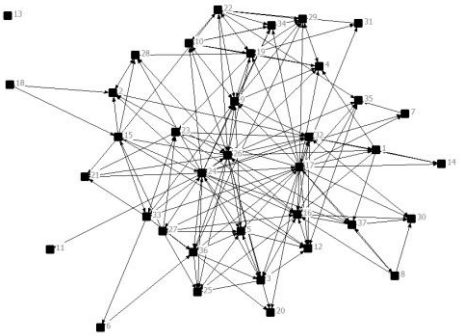
In the expressive network, the findings looked as if an association among a principal's network location, school working conditions, and student achievement in each of the four schools did not exist. This is on account of the results depicted the principal of school LL as having the densest network structure of 43%. However, after further examination, findings suggest that the quantity of ties of a principal network is not adequate for school improvement. Moreover, the quantity of ties in the absence of quality may actually weaken the network and ultimately undermine student achievement. Examples of how an adequate number of ties lacking in quality may constrain student achievement include impeding the activation of novel information (Szulanski, 1996) and



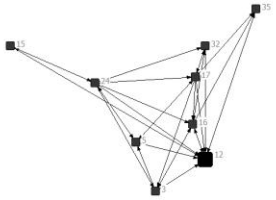
School HH: Whole Network Speaking Candid



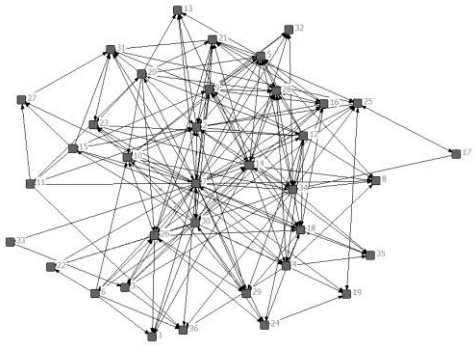
School HH: Ego Network Speaking Candid



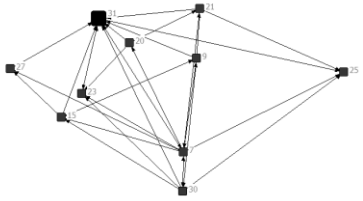
School LH: Whole Network Speaking Candid



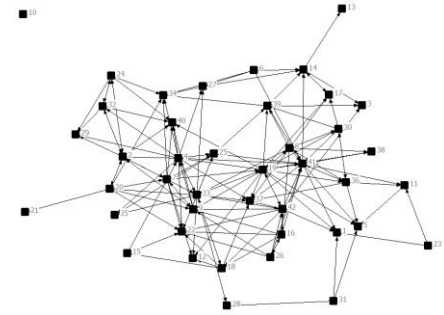
School LH: Ego Network Speaking Candid



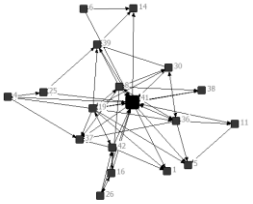
School HL: Whole Network Speaking Candid



School HL: Ego Network-Speaking Candid



School LL: Whole Network Speaking Candid



School LL: Ego Network Speaking Candid

Figure 5. Expressive Networks for Whole Networks and Ego Networks

reprocessing repetitive information (Hannan & Freeman, 1984; Burt, 1992). Therefore, the quality of ties is presumed equally as important as the quantity. This finding draws a parallel to the assertions of Rossi and Stringfield (1995) stating that the quality of relations plays a decisive role in all aspects of school operations.

Similar to the expressive ego networks, the findings of the expressive whole networks did not seem to support an association among faculty cohesiveness, school working conditions and student achievement in each of the four schools. Although the findings were similar, the results of the density of the faculty network structure vastly differed from principal centrality. Unlike principal centrality of 43%, school LL had the sparsest network structure (9%), a significant difference in perception. Daly (in press) proposed three important concepts related to leadership and school improvement: the importance of discrepancies in perception, the significance of trust as a prerequisite for encouraging learning and school improvement, and changing relationships from one of acquiescence to one of increasing school capacity for improvement. Realizing the ideas set forth by Daly may reduce the limits of school improvement. By bolstering the relationship between the principal and the faculty professional dialogue concerning complex issues related to school improvement may materialize.

Conclusion and Discussion

This study explored the variations in student achievement as a function of relationships between the principal and faculty of four elementary schools. Findings indicated that social capital attained by principals through building relationships with faculty members offers opportunities and limitations (Bourdieu, 1986; Lin 2009). Principal centrality and faculty cohesiveness of School HH illustrated opportunities

through high structural social capital, as evidenced by two instrumental networks, advice in literacy and advice in math. Podolny and Baron (1997) argued that "a cohesive network conveys a clear normative order within which the individual can optimize performance, whereas a diverse, disconnected network exposes the individual to conflicting preferences and allegiances within which is much harder to optimize" (p. 676).

School LL highlighted the significance of relational social, as evidenced by the expressive network, manifested as trust. The faculty density of school LL revealed the least dense network structure. However, the principal centrality of school LL indicates the most dense network structure. The variation in the ego and whole networks of school LL confirms Daly's implications (in press) concerning the significant differences in perception, trust as a requisite for building relationships, and the need to improve schools through building relationships.

In addition, dense network structures typically imply an increase performance in organizations. However, our findings from the principal centrality of school LL illustrated that the quantity of ties are necessary, but not sufficient. Moreover, producing ties lacking in quality may create a debilitating network and ultimately constrain student achievement. Furthermore, a principal's influence, as measured by centrality, is considered an indispensable resource (Moolenaar, 2010). Moolenaar and Sleegars (2010) affirm school leaders foster strong teacher relationships. The number of quality relationships established between the principal and faculty members may contribute to the flow of instructional information and resources to aid in enhancing student achievement. This conclusion is supported by studies suggesting that the social network

position of a leader is associated with group performance and leader reputation (Mehra, Dixon, Brass, & Robertson, 2006; Sparrowe & Liden, 1997).

Limitations Specific to SNA

One of the challenges with SNA involves the concept portraying social networks as dynamic rather than static structures. Collecting data of single networks entail only a snapshot of schools. In addition, findings obtained from perceptions surveys rely on self reported data. Perceptions may differ from reality due to specific incidents and lack of experience needed to make comparisons. As a result, a person's skewed view results in a bias. Nevertheless, perception surveys are frequently more useful for examining behavior based on perceptions than measuring actuality (Marsden, 1990).

A second limitation encompassed unintended consequences. Opting out did not preclude individuals from being portrayed in a sociogram (Borgatti & Molina, 2003, 2005). Although the researcher could not ensure anonymity in the data collection stage because participants may disclose their own names and those of their colleagues to construct a picture of SNA, the researcher pledged confidentiality. Furthermore, in the study completed by Penuel, Sussex, Korbak, and Hoadley (2006), the researchers employed SNA for the purpose of improving schools by fostering greater collaboration between teachers. From the standpoint of the principal, information extracted from SNA may potentially provide value for school leaders. However, the unintended consequence of the information could bring harm to individuals and school communities. For instance, some teachers reported concerns about privacy and the effect on fostering school community if the data were shared with schools.

A third limitation entailed generalizability. Although the findings contained rich information, this study consisted of four case studies. The generalizability of case studies is inherently limited. The researcher recommends further inquiry concerning the social capital of a leader to determine explicit outcomes among all levels of education in order to strengthen database and generalizability of findings related to social capital in improving school reform.

Implications

This research has important implications for school improvement. Facilitating complex organizational change in public schools requires quality, dense network structures reflecting technical relationships in tandem with social relationships to permit the flow of information and resources (Daly & Finnegan, 2010). The significance of social capital appears under examined in education. Moreover, the positive outcomes attributed to high levels of social capital are under identified. For these reasons, further exploration of social relations through the lens of social network analysis is suggested to advance school reform. As mentioned, the focal point of much of educational reform converges on the technical aspect of schooling (Daly, 2009). Given that the American public schools constitute a public good, the social aspect of reform demands equal forethought among all stakeholders. Currently, technical policies undervalue relations, and as observed by Rossi and Stringfield (1995), the outcome of taking quality relationships for granted contributes to unproductive schools. Therefore, a recommendation for policymakers is to shift policies from compliance to building school capacity (Daly, 2009) by supplementing relational aspects pertinent to education to the technical aspects of educational policies.

Policies that regard relationships as instrumental in moving education reform forward will assist school leaders in improving student achievement. Principals are leaders of teachers. However, as a school leader, principals play a significant, yet immensely different role than classroom teachers on student learning. The goal is no longer how to become an exemplary classroom teacher, but how to prime teachers to become exemplary. Producing quality teachers is a process requiring not only technical knowledge, but also a personal investment of time and effort to establish meaningful social relations. Relationships grounded in trust provide the groundwork for building school capacity (Daly, 2009). High levels of social capital may facilitate a willingness to share knowledge to generate a productive cycle conducive to teaching and learning. In the process of collegial conversations focused on student work, informal teacher leaders emerge. The collective efficacy among school leaders and teachers aspires to support one common goal, improving student achievement.

ANALYSIS OF SOCIAL NETWORKS OF PARENTS OF STUDENTS WITH AUTISM

The number of diagnoses of Autism Spectrum Disorders (ASD) dramatically increased during the first decade of the 21st century, challenging public educators to meet the needs of students with autism and their families. Between the 2001 and 2010 school years, the number of children with autism served through the Individuals with Disabilities Education Act (IDEA) (2004) quadrupled (Scull & Winkler, 2011). Although more students with autism attended school and received specialized programming, according to the Autism Society of America, only 56% finished high school and many did not maintain employment as adults (ASA, 2011). Just 43.9% of high school graduates with autism enrolled in postsecondary education, fewer than any other disability category except mental retardation and multiple disabilities (Newman et al., 2011). For a student population educated across the gamut of educational placements, including advanced program, the outcome statistics for students with autism who graduate from high school are staggering, especially when compared to other students with disabilities (Newman et al., 2011).

For the past 20 years IDEA required schools to serve students with autism through special education and related services to address the impact of autism on the student. Despite this requirement, no Evidence Based Practices (EBP) have surfaced through What Works Clearinghouse (WWC) (Odom, Collet-Klingenberg, Rogers, &

Hatton, 2010). In 2001, the Office of Special Education Programs (OSEP) of the United States Department of Education, charged the National Research Council (NRC) "to consider the state of the scientific evidence of the effects of early educational intervention on young children with autistic spectrum disorders" (National Research Council [NRC], 2001, p. vii). The NRC discovered several features common to effective programs. However, all programs were comprehensive treatment models or packages (Odom et al., 2010). In 2007, OSEP, intent on identifying EBPs for autism, funded the National Professional Development Center on Autism Spectrum Disorders (NPDC) (Odom, et al., 2010). The NPDC considered only focused intervention practices and established 24 EBPs for students with autism (Odom et al., 2010).

EBPs for autism form the foundation of intervention programs for students with autism. Parents, the consistent advocates in student's lives from school to adulthood, must persist in accessing EBPs in the areas of education, employment, and independent living for adults with autism. The NRC (2001) and NPDC (Odom, 2011) stressed the need for parent-teacher collaboration. Likewise, IDEA mandates parent participation in all aspects of educational programming (U.S. Department of Education [DOE], 2011). In the call for parent–teacher collaboration, parent social networks often evolve as a factor considered.

The purpose of this study was to determine the extent to which social networks of parents of students with autism associate with the school factors of teacher perceived working conditions and student achievement. After reviewing literature, we hypothesized that schools in which teachers are content with working conditions will demonstrate evidence of more communication with parents, leading to a larger parental

social network. Based on prior research, we hypothesized that in schools with positive teacher perceptions of working conditions, parents will comprise more diverse social networks, including people in different roles within the school and district due to the openness of school personnel. If differences in the size and diversity of the social networks of parents in relation to teacher working conditions and achievement exist, schools will have other variables which can become a focal point of educational improvement efforts. With larger and more diverse social networks, parents will be more able to utilize their social capital and gain better outcomes for their children. To achieve this purpose, we will use social network analysis to address the following questions:

1. Does the size of the social network of parents of students with autism vary depending on teachers' perceptions of working conditions and students' academic achievement?
2. Does the diversity of the social network of parents of students with autism vary depending on teachers' perceptions of working conditions and students' academic achievement?

Background

Individuals with Disabilities Education Act and Parent Participation

Parents drove reform in special education prior to the 1970s, advocating for educational rights which led to the development of The Education for All Handicapped Children Act (EAHCA) or P.L. 94-142 (1975), later reauthorized as IDEA (1990) (Katsiyannis, Yell, & Bradley, 2001; Yell, Rogers, & Lodge Rogers, 1998). Katsiyannis, Yell, and Bradley (2001) stated,

> The civil rights movement of the 1950s and 1960s was a catalyst to parents and advocacy groups to begin using the courts in an attempt to force states to provide a public education that was appropriate for their children's unique needs. (p. 325)

After Brown vs. Board of Education (1954), which led to equal opportunities to education for black children, parents of children with disabilities quoted the Brown decision to demand equal rights to education for their children with disabilities, as a class of people (Katsiyannis et al., 2001; Yell et al., 1998).

EAHCA ensured that all children with special needs received a free, appropriate, public education (FAPE). Within FAPE, requirements included education at the public's expense that met the standards of the state department of education for preschool through high school and conformed with the student's Individualized Education Program (IEP) (Katsiyannis et al., 2001). Since 1975, reauthorizations of EAHCA drove special education programming. EAHCA mandated reauthorization every four years to continue funding for parts of the act. Changes or amendments over the years included changing the name to the Individuals with Disabilities Education Act, changing references from handicapped children to children with disabilities, and adding autism as a disability area in 1990 (Dettmer, Thurston, & Dyck, 2005; Katsiyannis et al., 2001).

Reauthorizations of IDEA continued to support the role of parents, a guiding principle of EAHCA (Staples & Diliberto, 2010). Parent rights under IDEA included rights in the areas of decision making, planning, evaluation, and intervention. The 1997 reauthorization of IDEA included amendments providing for improved parent/professional partnerships and strengthened the role of parents (Dettmer, et al., 2005; Katsiyannis et al., 2001). Katsiyannis et al. (2001) stated,

> The goal of IDEA 1997 is to have parents play a meaningful role in the education of their children and to maintain a partnership between schools and families. Parental involvement is crucial to successful results for students, and indeed this provision has been one of the cornerstones of the IDEA. (p. 331)

In 2010, Trainor related parent participation under IDEA to social capital. She identified school personnel's legal responsibility to facilitate parental participation in the special educational process under IDEA. Justifying this, she recognized parent participation as the most important defining principle of IDEA due to its existence in all other defining principles (Trainor, 2010).

Beyond the policies, researchers touted correlations between parental participation in special education and positive outcomes for students and schools (Dettmer et al., 2005; Whitbread, Bruder, Fleming & Park, 2007; Hess, Molina, & Kozlesi, 2006; Lee & Bowen, 2006; Koegel, Robinson, & Koegel, 2009; Staples, & Diliberto, 2010). In their report on guidelines for successfully involving parents, Staples and Diliberto (2010) discussed the positive relationship between parental involvement and test scores, grades, and generalization and maintenance of skills. The authors also promulgated the school's role in ensuring parental involvement (Staples & Diliberto, 2010). In an analysis of a course on special education procedures taken by more than 1,300 parents, Whitbread, Bruder, Fleming and Park (2007) correlated parental involvement with improved social competence and decreased litigation. Lee and Bowen (2006) examined five types of parent involvement (involvement at school, parent-child educational discussions, homework help, time management, and parent educational expectations) and the impact on academic achievement disaggregated by race/ethnicity,

income, and parent's education level. The authors linked parent involvement with mediating the effects of out of school factors on achievement and assisting in decreasing the achievement gap (Lee & Bowen, 2006). Researchers have shown that parent-school collaboration benefits both students and schools and therefore argued that school personnel need to promote and encourage parental participation (Lee & Bowen, 2006; Koegel et al., 2009).

Despite the correlations with positive outcomes, schools still varied on their implementation of legislative mandates with respect to ensuring parental involvement (Hess et al., 2006). Hess et al. (2006) declared,

> Unfortunately, the interpretation of parental involvement and its application in the schools has, at times, reflected the minimal amount required by law…Despite research supporting the positive effects of parental participation on student achievement, schools continue to resist accepting parents as full partners (p. 148).

Daniels (2000) proclaimed that IDEA mandated schools to hear parent's voices, not just encourage them. He identified legislators' initiatives to increase parent participation and stated, "The choice to involve parents in the decision making process reflects the congressional view that educational opportunities and rights of students with disabilities can best be protected by creating an arena where parents and teachers can agree on the child's education" (Daniels, 2000, p. 3).

Social Capital

In order to participate in educational decisions for children, parents must possess some sort of social capital, including relationships with educational professionals. *The Forms of Capital*, written by Bourdieu in 1986, illuminated the concept of social capital

in education. Bourdieu (1986) described capital in the following terms, "It is what makes the games of society—not least, the economic game—something other than simple games of chance offering at every moment the possibility of a miracle" (p. 241). After Bourdieu presented his framework based on economic capital, Coleman (1988) developed and published his theoretical framework, *Social Capital in the Creation of Human Capital*. Coleman (1988) focused on the use of social capital in developing human capital. Although the two researchers' theories stand as the seminal research on social capital, each presented a different view on the concept, adding differently to the field. Both Bourdieu and Coleman recognized the significance of social networks in social capital and developed their theories in attempts to explain educational outcomes (Dika & Singh, 2002).

Bourdieu (1986) theorized that services accrue from the useful relationships an agent, typically the parent in education, possesses or from the resources of others. In relation to social capital, Bourdieu (1986) stated,

> The volume of the social capital possessed by a given agent thus depends on the size of the network of connections he can effectively mobilize and on the volume of the capital (economic, cultural or symbolic) possessed in his own right by each of those to whom he is connected". (p.247)

Within his framework, people and/or groups utilized strategies to invest in networks with the intention of establishing relationships they can employ to develop resources. From Bourdieu's perspective, social capital becomes useful when economic capital does not lend itself to access goods. In some instances, as in public schools, the expenditure of economic capital becomes futile. In order for families to develop strong educational

programs in public schools, they need to call upon their social networks and utilize social capital (Trainor, 2010).

To a great extent, educational research conceptualized social capital in relation to Coleman's framework (Dika & Singh, 2002). Coleman (1988) combined components of sociological and economic "streams" of social action to develop his framework of social capital. He stated that the definition of social capital depends on its function, meaning that the social structure and the actions of the agents define one's social capital. According to Coleman, the value of parent's social capital depends on the social organization or the school. He argued that social capital, a resource of an actor, exists between two actors and makes "…possible the achievement of certain ends that in its absence would not be possible" (Coleman, 1988, p. 98). Coleman differentiated social capital from other forms of capital inherent in individual agents, specifying that social capital exists between actors within their relationships.

Coleman (1988) described three forms of social capital: obligations, expectations, and trustworthiness of social structures; information channels; and norms and effective sanctions. From his perspective, if relationships exist, actors gain and lose social capital through associations. Links between actors combine to form an individual's social network which can be open or closed, influencing information flow and social capital of other actors. In closed networks, members trust each other, but at times lack trust in actors outside the network. Norms within networks arise in attempt to limit or encourage external influences or effects. Referring to social capital in terms of relationships, Coleman (1988) stated, "All social relations and social structures facilitate some forms of

social capital; actors establish relations purposefully and continue them when they continue to provide benefits" (pg. 105).

Social Network Analysis and Social Capital

After Bourdieu (1986) and Coleman (1988) conceptualized social capital, researchers accepted the responsibility of establishing an evidence base around the construct (Bolivar & Chrispeels, 2011; Dika & Singh, 2002; Gordon & Nocon, 2008; Kazak, 1986; Lee & Bowen, 2006; Perna & Titus, 2005; Santos, 2005; Trainor, 2010; Wanat & Zieglowsky, 2010). Daly (2010) stated, "A number of theorists have written on this subject; each foregrounding a different aspect and offering a nuanced understanding of the concept" (p. 4). Research in the area of social capital highlighted its inclusion in educational legislation, including the No Child Left Behind Act of 2001 (NCLB) (Gordon & Nocon, 2008) and IDEA (Kazak, 1986; Trainor, 2010). Studies also emphasized minority populations and the use of social capital (Bolivar & Chrispeels, 2011; Dika & Singh, 2002; Lee & Bowen, 2006; Perna & Titus, 2005; Santos, 2005). In order to analyze social capital, investigators utilized case study designs (Bolivar & Chrispeels, 2011; Wanat & Zieglowsky, 2010) and both quantitative (Lee & Bowen, 2006) and qualitative (Horvat, Weininger, & Lareau, 2003; Trainor, 2010) methodologies. In the last decade of the 20th century, researchers began to analyze social networks or relationships, as a component of social capital, through Social Network Analysis (SNA) (Daly, 2010).

Educational studies of social networks originated in the late 1970's and began to increase in number in 1995 (Daly, 2010). Marin and Wellman (2009) explained that SNA is a perspective or paradigm, not constituting either a theory or methodology, but a

technique for examining a problem. Clarifying that researchers cannot make predictions based on SNA, Marin and Wellman reported that analysts can utilize SNA to guide them on where to look for answers to problems. The premise that relations and the patterns they form create one's social network shaped the foundation of SNA.

Scott (2000) reviewed the development of SNA as researchers utilize it today. He documented SNA's origins from sociometric analysts and graph theory to Harvard in the 1930s and the exploration of interpersonal relations and patterns within those relations. Further, Scott documented how anthropologists' built upon SNA's roots by investigating relations of communities. Congruent with Marin and Wellman, Scott reported that SNA is not a theory, but he linked it with structural theories of action. Additionally, Scott explained that SNA can be either quantitative or qualitative.

Haythornthwaite (1996) reviewed SNA in its role of study information exchange and stated, "…a social network approach offers a rich variety of concepts and techniques to describe and explain information access" (p. 325). She highlighted the focus of SNA on patterns of relationships and who exchanges information with whom, explaining that data often evolves from interviews and surveys. In relation to the dissemination of information, Haythornthwaite suggested that programs responsible for spreading knowledge of services employ SNA to analyze information routes and augment the way they disperse information. Additionally Haythornthwaite (1996) stated,

> actors have greater access to information if their network has a greater range, that is, if they are members of more and larger networks, and if their contacts are themselves members of large networks which do not overlap with their own networks. (p. 338-339)

Wanat and Zieglowski (2010) declared social capital an indispensable component of social network theory. The authors defined social networks as a person's relationships and links to others that assists in the acquisition of social capital. The size of parents' social networks correlate with the amount of social capital they accumulate. Due to the interdependence of social networks and social capital, SNA emerged as the appropriate methodology to assess parental social networks in schools. Researchers used two main strategies to analyze relations, whole network analysis and egocentric analysis or ego network analysis (Daly, 2010; Haythornthwaite, 1996). Whole network analysis measures ties between all possible actors in a population. In ego network analysis, a single actor becomes the unit of measurement (Daly, 2010; Scott, 2000).

As an example, Stanton-Salazar and Dornbusch (1995) conducted a SNA to analyze the information networks for 205 Mexican-origin students from six high schools. The authors found some support for their hypothesis that Mexican-origin students with better grades and higher expectations of status have more social capital in terms of ties to institutional agents in school (Stanton-Salazar & Dornbusch, 1995). Studying social networks of parents, Sheldon (2002) surveyed 195 mothers of first through fifth graders in two elementary schools, one urban and one suburban. Sheldon found that parents accumulate resources through their networks and reported that parents with larger social networks have access to more social capital through ties with others. To increase parental involvement in their child's program, Sheldon suggested that schools connect isolated parents with other parents and encourage and foster parent involvement.

Not all parents establish similar social networks. Horvat et al. (2003) published an ethnographic study focused on parent social networks. The study involved interviews

and observations of 88 third and fourth graders and their families. Horvat et al. found that middle class families had open networks which included parents of their children's friends. In contrast, the researchers established that social networks of working-class and poor families consisted of familial ties, closed to non-kin ties, presenting them with less access to resources. The authors stated, "…it is not the simple fact of network connections that is significant, but rather the quantity and quality of the resources that are accessed through them- vis-à-vis the particular institutional setting" (Horvat et al., 2003, p. 347).

Studies utilizing SNA have documented positive effects of parental and student social capital on educational outcomes (Horvat et al., 2003; Sheldon, 2002; Stanton-Salazar & Dornbusch, 1995). Social capital develops through the accumulation of relationships. Relationships only increase social capital if actors understand how to utilize social capital to gain resources (Bourdieu, 1986; Coleman, 1988). Parents of students with disabilities may feel overwhelmed and not make productive use of social capital without support. In the population of children with disabilities, students may not understand how to access and exchange social capital, especially students with autism due to their limited social communication skills.

Autism

Kazak (1986) established that parents of students with disabilities experience social seclusion, resulting in isolation form formal and informal support. With respect to students with disabilities, Trainor (2010) argued that teachers hold the responsibility of attenuating barriers to educational opportunity and compiling parental social capital. Trainor explained that advocating for parent participation in the special education process

serves the purpose of increasing educational opportunities for children with disabilities and proposed more investigation into the exchange of social capital in order to close the gap between intent and implementation of IDEA. The fastest growing population of students benefitting from IDEA in the first decade of the 21st century consisted of students with autism (Scull & Winkler, 2011).

The Organization for Autism Research (OAR) defined Autism as a neurologic developmental disorder that impacts children in the areas of social and communication functioning, as well as repetitive behaviors (Holtz, Ziegert, & Baker, 2004). Autism is a spectrum disorder that affects students differently in school (Autism Society of America [ASA], 2011). Children with autism have difficulty due to needing both social and communication skills for educational success, (Centers for Disease Control [CDC], 2011; Holtz et al., 2004). Furthermore, children with autism do not generalize skills across people or environments, increasing the need for advocacy and consistency between all adults in their lives (Koegel et al., 2009).

Since the addition of autism to IDEA, educators have witnessed an increase in students with autism who received services. According to the CDC's Autism and Developmental Disabilities Monitoring Network, the number of children identified with ASD rose to 1 in 88, up from 1 in 150 in 2002 (CDC, 2012; Autism Speaks, 2011). Not all children with autism qualify for special education services; eligibility depends on the impact on a student's educational success or access to core content (DOE, 2011). Approximately 41% of students with autism have impaired cognitive ability (CDC, 2011) and many exhibit behavioral difficulties in school (Holtz et al., 2004). Teachers bear the

responsibility of differentiating instruction in order to meet the varying needs of students with autism (ASA, 2011; CDC, 2011; Holtz et al., 2004).

Students with autism who qualified for special education received services in all educational placements, ranging from self-contained classrooms for students with severe needs to general education classrooms, including advanced placement (Koegel et al., 2009). IDEA mandated education in the LRE with peers from a student's community, which led to inclusion (IDEA, 2004). Furthermore, many parents of children with autism want their children to participate in inclusive classrooms for the social benefits, as well as academic (Dettmer et al., 2005; Koegel et al., 2009).

In order for students with autism to succeed in any school program, all adults in their lives must collaborate and work in a consistent manner (Koegel et al., 2009; NRC, 2001), which has caused researchers to call for collaboration between parents and teachers (Dettmer et al., 2005; Whitbread et al., 2007; Koegel et al, 2009; NRC, 2001; Staples & Diliberto, 2010). Koegel et al. (2009) stated that collaboration between the family and school is vital when developing IEPs for students with autism because it positively impacts the behavioral challenges of these students. Additionally, Koegel and colleagues (2009) documented that schools influenced parent participation in special education by being responsive and creating opportunities for interaction and communication. Furthermore, within an OSEP report, the NRC (2001) stated that parents must network with educators and other parents to gain the information necessary for their child's educational success.

In the past, parents of children with autism assumed the role of advocate to achieve increased rights and services for their children. As the leading advocates for

children with autism, parents successfully demonstrated the need for national reform in the medical community (Autism Speaks, 2011), resulting in 33 states adopting insurance laws mandating coverage for autism (National Conference of State Legislatures, 2011). Parents continue to campaign for their children with autism in education. Koegel et al. (2009) reported that the fastest growing and most expensive area in litigation in special education is in the area of appropriate school programs for children with autism suggesting that schools can decrease litigation in the area of autism by partnering with parents.

Social Network Analysis and Autism

Due to the utility of SNA in other areas of educational research, the technique emerges as an appropriate method to study the success of parent-teacher partnerships. With respect to autism, SNA has been utilized to assess the networks of children (Chamberlain, Kasari, & Rotheram-Fuller, 2007; Frostad & Pijl, 2007; Pijl, Frostad, & Flem, 2008; Yugar & Shapiro, 2001). To date, scant research has explored the social networks of parents of children with autism within schools. Through a search of the words *parents, autism,* and *"social network analysis",* we found ten relevant studies, but none analyzed the social network of the parents of students with autism. All studies specifically addressing autism analyzed the social network of the children with autism (Chamberlain, Kasari, & Rotheram-Fuller, 2007; Yugar & Shapiro, 2001) (Table 12). Although researchers have used SNA to analyze the networks of parents of students in other underrepresented populations, they focus on race and SES, rather than disability (Horvat et al., 2003; Sheldon, 2002; Stanton-Salazar & Dornbusch, 1995).

Table 12

Google Scholar Search: Key Words "parents, autism, and social network analysis"

Author / Year	Sample	General Results
Yugar & Shapiro (2001)	174 elementary school children in 1st through 3rd grades from two elementary schools	90.8% of students reciprocally matched in levels of friendship Parents and teachers identified children's tope three friends 79.3% and 72.4% of the time
Chamberlain, Kasari, Rothermam-Fuller (2006)	398 students in 2nd through 5th grades in general education classes 17 of the 398 had autism	Parent/teacher interventions enhanced student's social success Parental social capital led to increased rates of inclusion for students with autism
Panacek & Dunlap (2003)	14 students with Emotional Behavioral Disorders (EBD) in a self contained classroom and 14 students in a matched comparison group	8% of activities for students with EBD were socially integrated vs. 100% for matched group Marked difference between school and home networks for students with EBD
Frostad & Pijl (2007)	989 students in 4th through 7th grade general education classrooms	Parents of students in inclusive settings aim to increase the child's network Some parents emphasize social goals over academic goals
Pijl, Frostad, & Flem (2008)	989 4th through 7th graders in general education classrooms	Students with autism in inclusive classrooms have amplified social integration difficulties
Wanat & Zieglowsky (2010)	20 parents from two different parent groups in one school	Parents experienced limited or conflicting communication from school School personnel desire lack of engagement from some families
Thompson (2008)	30 parents and 30 teachers across all grade levels	Parents typically initiated e-mail communication Most frequent topic of e-mails concerned grades
Koster, Pijl, Nakken, & Van Houten (2010)	237 students with & 353 students without special needs in inclusive elementary school classrooms	Students with special needs had fewer friends and were less accepted Self-perception did not differ between groups
Messiou (2006 a & b)	227 elementary aged children in Cyprus	Four forms of marginalization found: recognized by many, not recognized by others, not recognized by child, and not admitted by child

National reform efforts promoted, even mandated, relationships between parents and teachers, realizing the benefits of social networks in the creation of social capital. Schools, legally obligated to include parents in the programming of students with autism, must facilitate networks with parents. Within different contexts, the ability of families to utilize social capital may vary. Therefore, in the present study, we explored social networks of parents of children with autism in schools through the contexts of teacher perceived working conditions and achievement. Within Coleman's (1988) theory of the norms of social capital, the relations among actors, or the structure of the social network, facilitate parents in realizing personal interests. With respect to educators, teacher's beliefs about their working conditions may relate to consistent norms that benefit all stakeholders. Daly (2010) reported that a supportive organizational climate encourages collaboration, therefore, if perceptions of working conditions are positive, teachers may partner with parents. For families in the current study, the interests consist of their child's educational program in relation to autism. Building from Daly's link between supportive climate and collaboration, we believed that better working conditions for teachers would have a positive effect on the size and diversity of parent social networks.

Methodology

In the evaluation of school improvement efforts, teacher working conditions and achievement are factors commonly analyzed (Hirsch, Emerick, Church, & Fuller, 2006). Therefore we used perceptions of teacher working conditions measured through the Kentucky Department of Education (KDE) Teaching, Empowering, Leading, and Learning (TELL) Survey and Kentucky Core Content Test (KCCT) scores to organize our population. The district analyzed, a metropolitan school district with more than

100,000 students, was chosen for convenience because each researcher worked in the district. All schools represented in this study participated in TELL in the spring of 2011. Of the 6,921 educators in the district, 5,985 or 86.48% participated in the survey. Students in all schools participated in the Kentucky Core Content Test (KCCT) in the spring of 2011. We charted measures into a scatter plot (Figure 6) with mean working conditions and mean achievement in math and reading.

A two-stage sampling selection process was conducted, by utilizing the scatter plot to find schools in different quadrants and then choosing schools which house classrooms for children with autism. We selected schools with autism classrooms based on the need to gather enough data about the social networks of parents of students with autism. The schools that participated in the study fell either in the high TELL/high KCCT (HH1 and HH2) or low TELL/low KCCT (LL1 and LL2) quadrants. Due to the requirement for schools with autism classrooms, the schools did not demonstrate a large variance from the mean working conditions or academic achievement measures (Table 13), therefore data may result in similar measures of size and diversity. This limitation resulted from the need for an appropriate sample size.

Participants

Participants included parents/guardians of elementary students with a primary IDEA (2004) eligibility of autism whose children attended the selected schools during the 2011 – 2012 school year. For students to meet eligibility for autism, they must meet certain criteria. According to KDE (2011), a student needs to: have a developmental disability, generally evident before age three, significantly effecting verbal and nonverbal communication and social interaction and the deficits are not primarily the result of an

emotional-behavior disability; evaluation information must confirm an adverse effect on educational performance; evaluation information must confirm that lack of instruction in reading and/or math was not a determinant factor in eligibility decision; and evaluation information must confirm that limited English proficiency was not a determinant factor in the eligibility decision. In addition, two of the schools educated students with autism in classrooms other than the autism classroom, such as general education or resource classrooms.

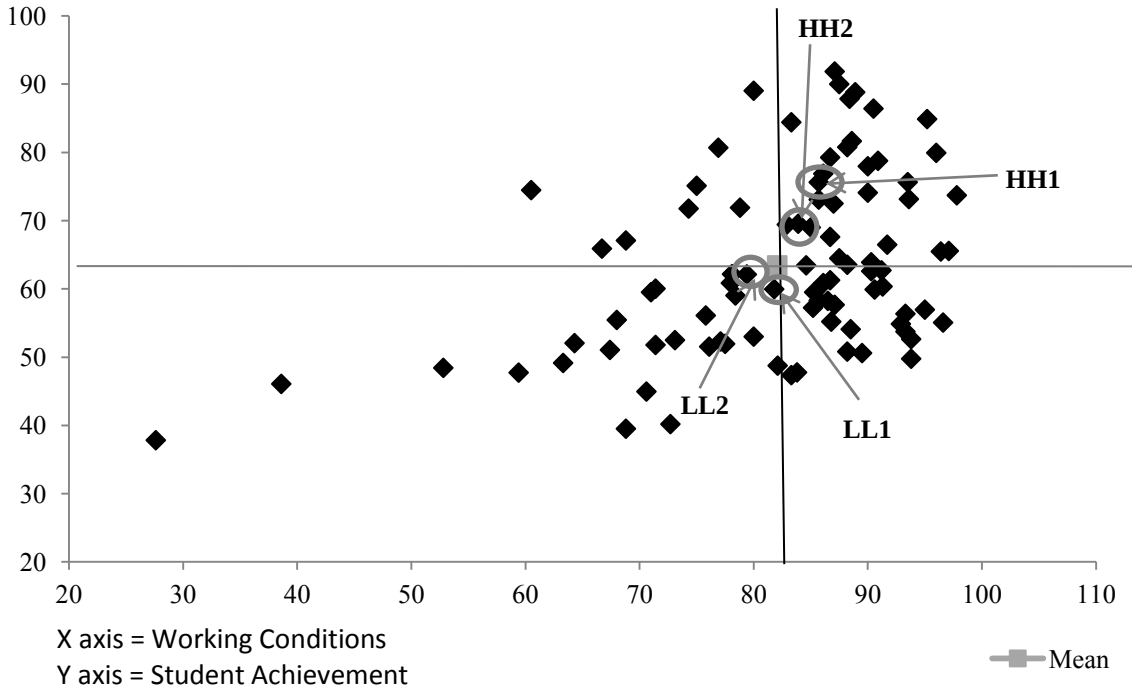


Figure 6. Scatterplot of Elementary Schools based on Working Conditions and Student Achievement

Instrument

Participants voluntarily completed a perception survey, the most common method used in SNA (Marsden, 1990), to provide data on their social networks with respect to their child's school program. Questions addressed the size and diversity of the parent's social networks. Respondents indicated people with whom they communicated about

Table 13

School Demographics

	HH1	HH2	LL1	LL2
% White	65.60	33.20	50.40	64.00
% Black	25.50	30.70	32.50	29.50
% Other	9.00	36.20	17.10	6.50
% FRL	50.00	92.60	85.90	82.40
% ECE	19.60	21.00	12.80	14.10
Students with Autism	12.00	8.00	6.00	6.00
Working Conditions	85.70	83.90	81.80	79.40
Achievement	75.63	69.55	59.96	62.12

their child's current program through free recall questions (Daly, 2010). Use of free recall questions did not limit the number of ties the informant could list, however it introduced the limitation of informants forgetting and listing only a sample of their true network (Daly, 2010). To counter this limitation, we provided informants with a list of possible educational team members (ties) developed from the formal, structural mandates of IDEA: administrator, special education teacher, and regular education teacher. The informant listed either the name or role of the tie and the frequency of their communication with the tie. Marsden (1990) reported the correlation between informant responses and observations to be high in relation to social science standards in ego network analysis, establishing the reliability of SNA at the individual level. Questions did not address a time period, as respondents do not restrict themselves to time-bound

transactions (Marsden, 1990). Marsden stated, "informant errors will be biased toward the routine, typical structure" (p. 447). The survey consisted of two prompts:

> *Please list the name and/or role of people that you communicate with about your child's current educational program.*
>
> *How often do you communicate with this person?* (Appendix D).

In addition, parents could include ties outside of the school, such as other parents and community service providers.

Data Collection

To collect data, we used a perception survey. First we sent each parent of a child with autism in the four schools a consent form and a survey (Appendix D). After the first signed consent and completed survey returned, one researcher called all other potential participants to ensure receipt of the forms and inquire about any questions or concerns. Furthermore, the researcher sent the teachers of the students the forms in a digital format to provide to parents who misplaced the forms received in the mail. After the deadline passed, the researcher called all potential participants who had not responded again to either complete the survey by phone or determine who required additional copies of the materials. We requested that participants who provided information over the phone return the signed consent either to their child's teacher or through the mail. We had interpreters contact parents who spoke English as a second language to explain the consent form and survey.

Of the 31 parents, 21 returned surveys, for a 68% return rate. One student moved to another school before the parents received the survey and two students' parents gave information via a phone survey, but never returned the consent form. Therefore we could

not report on these data. Although our return rate and sample are somewhat low, prior SNA work utilized even smaller samples. For instance, Coburn, Choi, and Mata (2010) conducted egocentric SNA on a total of 12 individuals, establishing our *n* of 21 as acceptable, and Sheldon of Johns Hopkins (2002) published a study with a 48% return rate. The percentage of return rates varied between schools: 67% for HH1, 56% for HH2, 80% for LL1 and 80% for LL2.

Analytic Procedure

We employed ego network analysis to examine the size and diversity of the social networks of the parents of students with autism who provided information and consent. Within ego network analysis, the focal actor is referred to as the ego or the parent in this study and the ego's communication partners are called alters. Marsden (1990) explained that ego data analysis "gives representative samples of the social environments surrounding particular elements and is compatible with conventional statistical methods of generalization to large populations" (p. 438). Therefore, we will be able to generalize the results we obtained through ego data analysis to the larger population of parents of students with autism. Marsden (1990) documented that network size remains stable over time and has reasonable reliability, although respondents typically understated the size of their network. Consistent with Marsden (1990), we know that parents in this study underreported the number of ties, because one researcher communicated with multiple parents about their child, but only one parent reported contacts with her on the survey.

To analyze data, we utilized UCINET version 6.365 software (Borgatti, Everett, & Freeman, 2002) and to visualize social networks we used NetDraw (Borgatti, 2002). Sociograms (Figures 6 – 9) represent people or actors by points, also called nodes

(Appendix C). Lines, also called edges, denoted relationships. The sociograms depicted the size of each parent's social network within the context of their child's program. Size, a dimension of the network's structure, equals the number ties an ego reports in his or her network (Scott, 2000). Size holds importance because each link within a network allows information to flow and has the ability to influence the ego (Scott, 2000). We counted the number of ties in each parent's network to establish network size for each respondent (Daly, 2010).

We also evaluated another dimension of network structure, the diversity of ties within each parent's network. Diversity, the degree to which the alters span functional areas was measured by the amount of distinct district and community roles within a parent's network, such as special education teacher, general education teacher, or counselor (Daly, 2010). Because many parents did not report on the frequency of interaction, we did not include frequency in our results. Due to data gathered and the information it offered, we reported on the diversity of both ties within the school district and in the community. Variance in social network size and diversity was analyzed across parents in the four schools to explain possible differences in outcomes (Marsden, 1990).

Through SNA, this study explored the relationship of parental social networks regarding their child with autism's education program with perceived working conditions and achievement in four schools. According to Marin and Wellman (2009) and Scott (2010), we cannot make predictions based on SNA, but it can help us understand where to look for answers. Analysis of data addressed our research questions pertaining to the size and diversity of parental social networks as measures of social capital. We conducted analysis both between four different schools and across parents within the

same school. Although a large amount of potentially intriguing results emerged from our data analysis, for the purposes of this report we focused only on the data relevant to the research questions.

Results and Analysis

Size of Parental Social Networks

Between schools. As can be seen in Figure 7, HH1 contained larger parental social networks than parents in the other schools. Schools HH1 and HH2, both of which demonstrated high working conditions and high achievement, differed in mean size by more than four ties. The mean size of parents' social networks in HH1 was 7.13 and in HH2 it was 2.8 (Table 14). Although HH1 demonstrated the largest mean size, HH2 (Figure 8) demonstrated the lowest of the four schools. Schools LL1 (Figure 9) and LL2 (Figure 10), both low working conditions and low achievement, differed by just over two ties. The mean size of parents' social networks in LL1 was 5.75 and in LL2 it was 3.5 (Table 14).

The finding that parents in HH1 reported the largest social networks indicated that these parents communicated with more people about the educational program of their child with autism than parents in the other three schools. This information partially confirmed our hypothesis that parents in schools with higher working conditions and achievement would have larger networks. However, contrary to our predictions, survey information from parents in HH2 (Figure 8) resulted in the smallest networks. Schools LL1 and LL2 reported less variance in the mean size of parent social networks. Therefore, network size did not consistently vary depending on working conditions and achievement, indicating the possible presence of other influences.

Table 14

Size and Diversity of Parental Social Networks by School and Parent

			Diversity (Role)	
	Parent	Size	District	Community
HH1				
	HH1.1	6	5	1
	HH1.2	6	2	2
	HH1.3	5	5	0
	HH1.4	6	5	1
	HH1.5	2	1	1
	HH1.6	14	5	7
	HH1.7	14	5	7
	HH1.8	4	4	0
	Mean	7.13	4	2.38
HH2				
	HH2.1	3	1	2
	HH2.2	4	2	2
	HH2.3	2	2	0
	HH2.4	1	1	0
	HH2.5	4	4	0
	Mean	2.8	2	.8
LL1				
	LL1.1	3	2	1
	LL1.2	7	7	0
	LL1.3	5	3	2
	LL1.4	8	5	3
	Mean	5.75	4.25	1.5
LL2				
	LL2.1	3	3	0
	LL2.2	0	0	0
	LL2.3	2	2	0
	LL2.4	9	3	6
	Mean	3.5	2	1.5

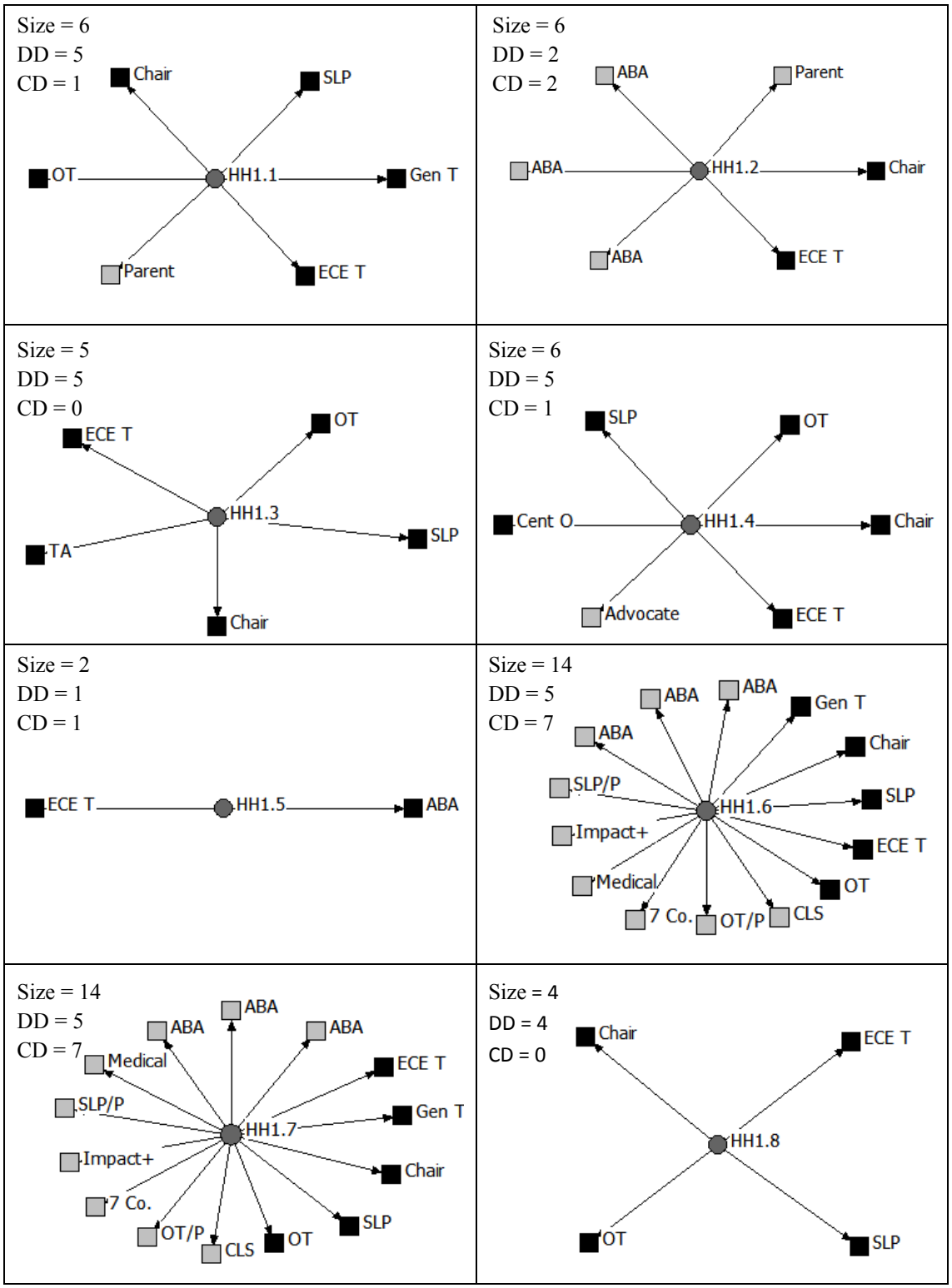


Figure 7. Sociograms representing parent social networks in HH1. Black squares represent district ties and gray squares represent community ties. DD = district diversity. CD = community diversity.

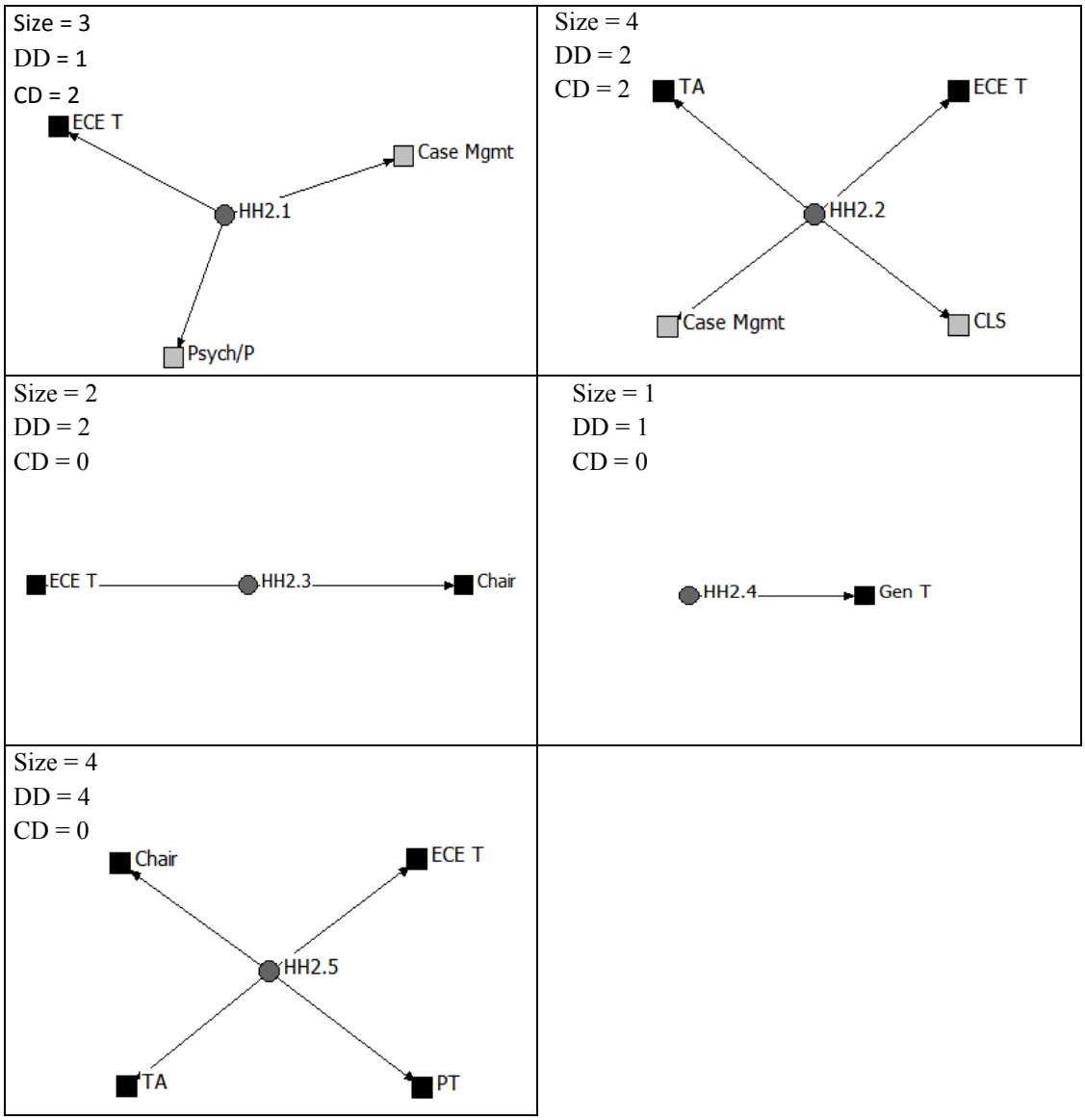


Figure 8. Sociograms representing parent social networks in HH2. Black squares represent district ties and gray squares represent community ties. DD = district diversity. CD = community diversity.

Not expecting the largest difference to exist between schools in the same quadrant HH1 and HH2, we compared the demographics of the populations in all four schools (Table 13). Dissimilar demographic information between HH1 and HH2 were percent of white students and percent of students receiving free and reduced lunch (FRL). Therefore, we reviewed the demographics across all four schools and found that HH1 and

LL2, a school from each quadrant, educated similar percentages of white students, 65.6 and 64%, respectively. Despite the resemblance of the student population between the schools, parents in LL2 reported a mean social network size less than half of HH1's parents, minimizing the impact of race on network size. Due to this evidence, we presumed that percent FRL accounted for more of the difference in size because HH1 had a smaller percentage of students qualifying for FRL. The other three schools served a population with at least 32.4% more students receiving FRL than HH1. The difference in the SES of HH1 may have contributed to the larger parental networks.

Within schools. Challenging the notion that working conditions and achievement associate with social networks, we found variability of the size of parents' networks within each school as well (Table 14). Parents in HH1 reported social networks ranging from as small as two ties to as large as 14, a range of 12 ties, the largest reported among the schools. The second largest range reported was that of parents in LL2 (Figure 10), with a similar percent of minority students as HH1. Sizes of social networks in LL2 spanned from one parent listing no ties, to a parent reporting nine, demonstrating a range in size of nine ties between parents in the same school. Parents in Schools LL1 and HH2, both serving a population with more than 49% of students of minority status, reported sizes that varied by five and three ties, respectively. In this small sample of four schools, parents in the schools serving smaller percentages of minority students reported a broader range of social capital, again contradicting our hypothesis pertaining to the size of parental social networks.

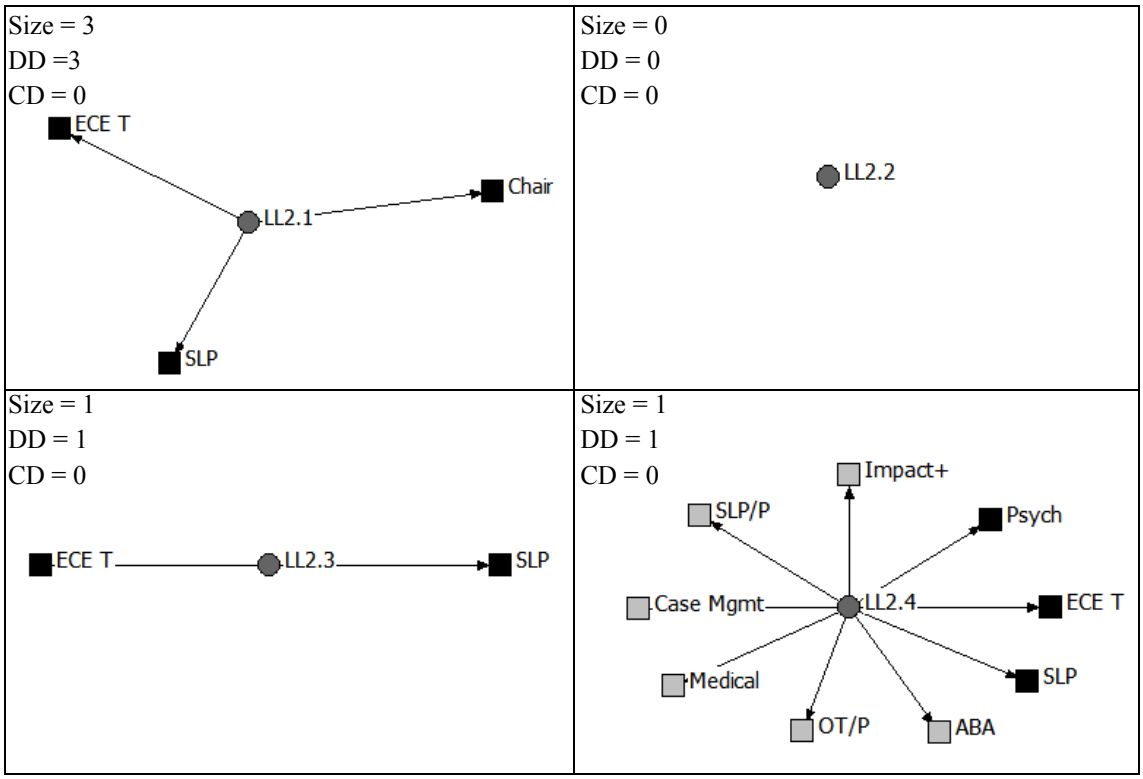


Figure 9. Sociograms representing parent social networks in LL2. Black squares represent district ties and gray squares represent community ties. DD = district diversity. CD = community diversity.

Diversity of Parental Social Networks

Between schools. We calculated diversity, the degree to which alters span functional roles, by counting the number of unique disciplines or roles accounted for in the parents' networks. Although indicating variability in diversity, parents across the four schools reported more similar measures in this dimension (Table 14). Ranges in mean diversity of district and community roles for all four schools were similar, but parents in HH1 (Figure 7) and LL1 (Figure 9) reported district diversity at least twice that of the other two schools. Diversity of district roles ranged from 2 to 4.25 ties between the four schools, with a mean of 3.19 across all schools.

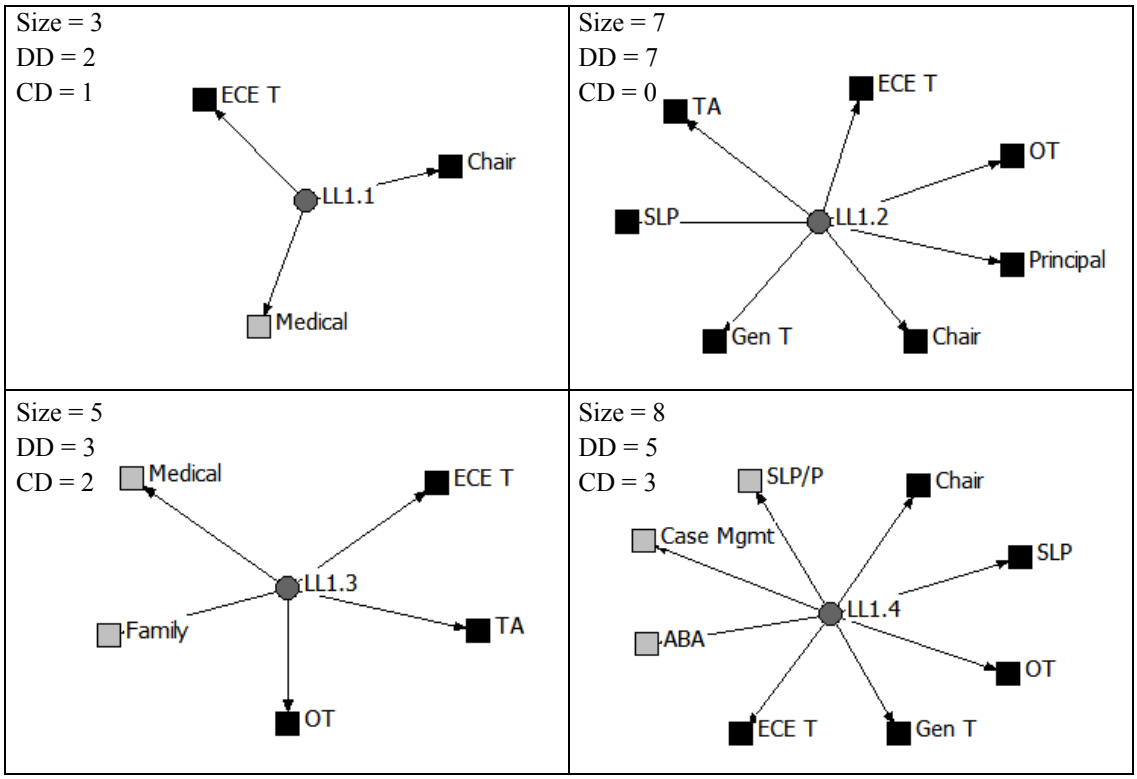


Figure 10. Sociograms representing parent social networks in LL1. Black squares represent district ties and gray squares represent community ties. DD = district diversity. CD = community diversity.

Table 15

Mean Dimensions by School

School	Size	Diversity	
		District	Community
HH1	7.13	4.00	2.38
HH2	2.80	2.00	.80
LL1	5.75	4.25	1.50
LL2	3.50	2.00	1.50
Mean	5.14	3.19	1.62

Note. Means computed with all participants, including outliers.

Restricted diversity indicated that parents communicated with professionals from limited numbers of disciplines or professional roles, despite the individual needs of their children. Limited diversity either indicated a lack of services or underreporting of ties. Only 29% of parents reported communicating with a general education teacher and just 69% reported communicating with a district representative. However, 90% of respondents listed the special education teacher as a contact. As most students with autism qualify for speech and occupational therapy, two disciplines accounted for in related services under IDEA, we expected reports of more diverse ties within the community of educational professionals. Diversity measures resulted in extreme variance between schools with high working conditions and high achievement (Table 15). Likewise, between LL1 and LL2 measures of district diversity varied (Table 15). Independent of working conditions and achievement, schools with comparable measures of mean district diversity fell into both quadrants on our scatter plot (Figure 6), disproving our second hypothesis.

We believe the finding that parents in HH1 reported communicating with more diverse community providers than parents from the other three schools established a relationship between network size and social capital. As seen in Horvat et al. (2003) and Sheldon (2002), within the community parents' accumulate services through information and from networking. Often parents hear about providers from other parents or through referrals from professionals. Parents with larger social networks within the district accessed more community supports and resources, possibly suggesting that they used information shared by others in their social network or that professionals involved with their child linked them with services, both methods relate to their social capital. Contrary

to our hypothesis, our study established that parents of students with autism attending high mean poverty schools experienced limited access to both district and community resources. Schools in both quadrants demonstrated limited diversity in the community, revealing no association between parental social capital and a school's working conditions and achievement.

Within schools. District and community diversity varied within schools as well (Table 15). Parents in HH1 reported district ties ranging from a diversity of 1 to 5, with community ties spanning from 0 to 7, demonstrating larger variability in ties to community support providers. Parents in LL1 reported a range of five distinct district ties, while community diversity demonstrated less variability with a range of three. Respondents in HH2 reported a range of district diversity of three ties and community diversity of two, with 60% of the parents reporting no network ties outside of the district. Surveys returned from LL2 demonstrated a range of three district ties and six community ties, although only one parent reported ties in the community. Therefore, 75% of parents at LL2 perceived themselves as having no community ties.

Diversity results within each school demonstrated unequal access to supports both inside and outside of the school. The range of ties across parents within the same schools indicated a disparity in the ability of parents to establish relationships and access services, correlating social networks to social capital among parents. Additionally, the array of community ties reported by parents within the same school established that the schools, one public good all parents had in common, did not aid parents in building relationships or social capital outside of school. If schools assisted parents in obtaining resources, parents in the same schools would have demonstrated similar community diversity.

Outlying Parental Social Networks

Analysis uncovered outliers which may have influenced results, as well as findings and implications. We identified outlying data from three parents, HH1.6, HH1.7, and LL2.4 (Figures 7 & 10), in both the size and diversity of social networks. In HH1, parents six and seven each reported 14 ties with seven different disciplines accounted for in their community ties, compared with all other parents in the school who reported six or fewer ties and community diversity with less than three different disciplines. Parent LL2.4 reported nine total ties and community diversity of six diverse roles, compared to other parents in the school who reported three or fewer ties and no community ties. After reviewing further, we discovered that HH1.6, HH1.7, and LL2.4 each had more than one child with autism, possibly leading to the larger networks with more diversity of roles in the ties. The identification that three parents had more than one child with autism revealed a historical threat to validity, as we interviewed parents and then recognized that they had more than one child with autism. Additionally, thorough analysis identified information at the teacher and school levels which may have influenced results. We agreed to include some of the qualitative information in our analysis (Table 16), such as teacher turnover rate and district autism support provided to one school.

We removed the outliers and reanalyzed. After removing the three parents, the mean dimensions of size and diversity for schools HH1 and LL2 decreased (Table 17). Additionally, removal of the outliers resulted in a smaller range in network size between schools. Range in network size between the schools dropped from 4.33 to 2.95 ties, demonstrating increased similarity in mean network sizes between schools. Mean district

diversity between schools remained comparable, demonstrating that with and without outliers, parents communicated with about three school professionals, although parents in Schools HH1 and LL1 listed almost twice as many ties as Schools HH2 and LL2. Removal of outliers influenced community diversity between the schools, dropping it from 1.62 to .78 distinct disciplines with a range of .7, indicating substantially fewer disciplines represented within community supports among parents in the four schools.

Given the decrease in mean number of ties and diversity of schools in this reanalysis, LL1 had the largest mean size and diversity. Parents in LL1, a school with low teacher perceived working conditions and low mean student achievement, reported larger, more diverse social networks, both in school and the community. We sought to understand this finding as we did not anticipate that a school with low working conditions and low achievement would possess larger parent network dimensions. One possible explanation for this finding was that, over the past five years, three teachers in the autism classroom in LL1 either transferred or left the district. Due to the high rate of turnover, the district's autism program provided intense program support to the classroom and staff to ensure student success in the absence of a consistent teacher. Either LL1 demonstrated notable circumstances with respect to assisting parents in building social capital or, plausibly, LL1 increased its social capital within the district from supplementary central office involvement.

Discussion

We attempted to examine the relationship of teacher working conditions and achievement in four schools with parent social networks, a proxy measure of social capital. Although SNA is not a theory or methodology, but a technique to examine

Table 16

Participant and School Overview

Parent	Size	Grade	Student & School Information
HH1.1	6	1	
HH1.2	6	4	
HH1.3	5	3	Sibling with autism in different class
HH1.4	6	3	Sibling with autism in different class
HH1.5	2	5	
HH1.6	14	5	Sibling with autism in same class; parents work for district
HH1.7	14	5	Sibling with autism in same class; parents work for district
HH1.8	4	3	
HH2.1	3	2	
HH2.2	4	5	
HH2.3	2	3	Sibling with autism; Parent works for district
HH2.4	1	2	Needed interpreter because parents do not speak English
HH2.5	4	5	
LL1.1	3	K	Central office involved in school for past three years to work with teachers; Four teacher turnovers in five years, two of four teachers were alternative certification
LL1.2	7	2	
LL1.3	5	2	
LL1.4	8	K	
LL2.1	3	5	
LL2.2	0	4	Needed interpreter because parents do not speak English
LL2.3	2	5	
LL2.4	9	K	Older sibling with autism

Note. Student level information gained through survey information provided by parent. Information on teachers and schools provided by researcher.

Table 17

Mean Dimensions without Outliers by School

School	Size	Diversity	
		District	Community
HH1	4.83	3.67	.83
HH2	2.8	2	.8
LL1	5.75	4.25	1.5
LL2	1.67	1.67	0
Mean	3.94	3	.78

problems, we believe our study established a starting point through which educators can reflect on student outcomes. This study examined the value of analyzing parental social networks pertaining to their child with autism's educational program. Parents establish networks which influence the flow of information and support provided to the child and family (Coleman, 1988). Typically, size and diversity of social networks correlate with improved provision of information and resources, as well as increased social capital (Bourdieu, 1986; Coleman, 1988; Haythornthwaite, 1996; NRC, 2001; Stanton-Salazar & Dornbusch, 1995).

Through our ego network analysis, our study focused on individual parents in four schools, not the characteristics of the schools themselves. Although Coleman (1988) linked the value of parent's social capital to the organization or school, we found variance within schools, indicating that individual contexts of parents and schools played a greater role with respect to their social capital. Bourdieu (1986) accredited relationships with resources, but we found that parents who had multiple children with autism accessed

more resources. Both findings identify the influence of individual contextual factors on social networks.

We found that size and diversity of parental social networks did not vary depending on teachers' perceptions of working conditions and student achievement. Through analysis we identified a possible relationship between student SES and network sizes between the schools. Variance within each school with respect to network size potentially resulted from the percentage of minority students served. With respect to district diversity between schools, measures demonstrated minimal adherence to the mandates of IDEA supporting Hess et al. (2006). District and community diversity measures demonstrated broad ranges within schools, indicating unequal access to supports among parents, even those within the same school (Haythornthwaite, 1996). After removing outlying data from three parents we found additional outcomes, indicating possible associations with having more than one child with autism. District support to schools was another potential influence identified. Despite disproving our hypotheses, we believe the study highlighted areas in which schools could focus to support students with autism and their families, assisting them in the development of social capital.

Within the context of our study, varied measures of the dimensions of size and diversity of parent networks created unpredicted results. One possible explanation of our outcomes could relate to Coleman's (1966) research and thus conclude that parental SES correlated with network size and diversity. We analyzed the data in various ways so as to provide multiple and balanced interpretations and develop practical implications for school and district leaders, as well as researchers and policy makers.

Size

Findings from this study with respect to size supported the association between SES and network size (Horvat, et al., 2003). Smaller parent networks existed in the schools with a high percent of students qualifying for FRL, regardless of teacher perceptions of working conditions, mean student achievement levels, or percentage of white students served. Bolivar and Chrispeels (2011) demonstrated that programs for underrepresented populations, such as students with autism, can assist in building social capital. Communicating this information to leaders with high percentages of students from low SES households affords them a reason to develop and implement practices that increase the size of parental social networks. Such practices might mitigate the effect of individual contextual factors on parental networks.

Variability within the schools lent itself to several suggestions for school leaders. With regards to the size of parental social networks, schools have the capacity to influence parental social capital (Bolivar & Chrispeels, 2011) by expanding the size of parent social networks. Due to the variance of network sizes within the schools in this study, as well as the NRC (2001) recommendation that parents must network with other parents to gain information, we recommend for leaders to develop school practices which influence parental social networks. Principals may enhance parental social capital by connecting parents with disparate network sizes, allowing parents with large networks to assist parents with small networks. Immediately this would increase the size of both networks while creating a tie through which information and support can flow to isolated parents (Sheldon, 2002). Likewise, school leaders can connect parents with support providers either in the district or in the community, adding to their network size.

Establishing practices which add to parental social capital assists parents with building their own support networks and advocating for their child with autism. Although the notion of adding one more practice to a school could seem overwhelming to a principal, it might actually decrease the school's responsibility. Bolivar and Chrispeels (2011) reported, "…when parents from disadvantaged groups receive information and training that increase social…capital, they can effect change in the educational system through their individual and collective actions" (p. 33).

Within the district studied, incomplete size of social networks within and between schools confirmed the need for increased outreach and consistent practices across the district. We suggest that central office staff, specifically in the autism program, review the data and construct opportunities for parents to meet, discuss district and community supports, and develop relationships. A district program providing opportunities for interactions among parents may alleviate the responsibility from teachers, allowing them to focus on instruction. Additionally, we recommend emphasizing the importance of building relationships with parents and families, not only due to our results, but also to the NRC (2001) report stating that parents must network with educators to gain the resources necessary for the educational success of their child.

Diversity

Data provided exhibited a common limitation of SNA, respondent forgetfulness. We knew that parents underreported ties at school because one researcher had worked with parents during the school year, yet was only listed on one survey. Underreporting may have indicated that school personnel required to participate in programming for students with autism did not uphold their responsibilities or that those parents failed to

understand the role of professionals in their children's programs. Either explanation demonstrated a failure of the schools to ensure parental understanding of their due process rights. With respect to the second explanation, additional disciplines may have participated in meetings pertaining to a child's program without clearly communicating their roles or without making an impression on the parent.

The technical structure of IDEA mandates at least three diverse educational disciplines participate in the development of an IEP: the special education teacher, a general education teacher, and a district representative. IDEA requires representation of more disciplines if the student receives related services, which the majority of students with autism qualify for due to core deficits in social communication skills, as well as sensory needs. The low mean level of district diversity representation demonstrated that the formal structures of IDEA have not deeply influenced the practices of schools.

The school which served the smallest percentage of students receiving ECE services also demonstrated the largest degree of district diversity. When a school serves a small population of students with special needs the number of professionals required to fulfill the student's programs decreases. A possibility exists that educators serving fewer students with disabilities achieve greater capacity to form relationships with parents because they work with a smaller number of families or perhaps the schools form a core support team who work collaboratively and accept the parent as a partner. Either option indicates a tipping point with respect to diversity, schools with a lower percentage of students eligible for special education services may become proficient at implementation of IDEA due to operational effectiveness or the ability to implement IDEA better than other schools (Porter, 1996). Operational effectiveness may allow the school to create fit

by developing a team that effectively implements the procedures of IDEA and ensures parental participation in the process.

Knowledge of parents underreporting ties exposes an important issue. School and district personnel need to ensure that parents understand the roles of every person involved in their child's program and how those professionals assist their child. Confusion derived from parental perceptions of other student receiving more or different services, based on hearsay, may cause tension between families and school personnel. In order for the procedures of IDEA to meet the needs of children with autism and their families, school personnel must communicate their roles effectively and confirm parental understanding. Lee and Bowen (2006) and Trainor (2010) charged schools with the responsibility of strategically reducing barriers for underrepresented parents. Educational organizations may guarantee fidelity of implementation of IDEA by complementing the structural procedures of IDEA with social aspects, such as relationships and collaboration, consequently creating fit (Porter, 1996).

Horvat et al., (2003), established that middle class families have open networks intertwined with the organized activities of their children. Our results support Horvat et al. (2003) by finding larger, more diverse networks in the school with the highest SES. The limited or lack of community ties of parents in the schools serving a higher population of students receiving FRL may result from closed parental networks, also indicative of the connection between SES and social capital. Horvat et al., (2003) coupled parents with low SES to closed networks in which they relied on family for support rather than others in the community.

We believe that diversity results within the schools justify our recommendation for schools to assist parents, not only in building relationships with different school professionals, but also in accessing various resources within the community. Diverse ties facilitate the exchange of information which parents might not otherwise access (Coburn, Choi, & Mata, 2010; NRC, 2001). Educational leaders could link families with children with autism to district and community resources, adding to their social capital. Doing so would provide consistency across environments for students and facilitate the generalization of skills, leading to positive outcomes. Connecting parents with support services would expand parental networks and provide parents with information and resources, possibly resulting in better outcomes for children. Many schools employ professionals responsible for reducing the barriers between home and school in order for students to succeed, perhaps these professionals should assist parents of children with autism.

Outliers

Results gleaned from removal of outliers provided unexpected outcomes. A school in which teachers reported low working conditions and with low student achievement demonstrated the highest means on all measures. Thorough analysis revealed a high rate of turnover in the school, resulting in increased support from the district autism program. Centralized, district assistance may have lent social capital to the school. Past research established that reform efforts succeed when aligned with district initiatives (Coburn, Choi, & Mata, 2010). Additionally, Coburn et al.'s (2010) research found that when district priorities change and resources are removed, schools fail to sustain improvements, possibly due to loss of fit. Our study coupled extra support

and assistance to increased social capital, not only of the school, but also of the parents in the school, demonstrating the value of relationships between district and school personnel.

Coburn et al. (2010) stated that policy and organizational context influence the formation of ties or relationships in schools; therefore recognizing the ability of leaders to institute school and district policies that create opportunities for professionals and parents to interact frequently around a child's educational program. When parental networks span different disciplines, parents gain access to specialized advice and support (Haythornwaite, 1996) surrounding their child's program which leads to the capacity for joint problem solving. Due to our results, we encourage educational leaders to facilitate the formation of ties between educational professionals and families through school level norms, structures, and practices, in order to benefit students with autism by increasing their parents' social capital. If the team develops relationships and works together on coordinated goals, students succeed, confirming the intent of IDEA's technical structure.

Another finding of Coburn et al. (2010), particularly relevant to the educational system, addressed the discordant side of policy. Although policy can facilitate the formation of ties and relationships, policy can also hinder relationships, resulting in isolated professionals. Isolation indicates limited social capital of teachers within a school which possibly results in decreased social capital of parents pertaining to their child's educational program. Structures, leadership styles, and the tacit culture in schools and districts directly impact an educator's willingness to trust others, establish norms, and reach out to professionals and families. Due to what Lipsky (1980) called "street level bureaucrats," public service providers, school personnel in this study, face the paradox of

serving all students comparably in conjunction with trying to meet student's individual needs. Lipsky (1980) claimed that "street level bureaucrats," implement policy in the context of limited human, fiscal, and informational resources, therefore enacting policy without fidelity. Public school leaders must develop climates conducive to relationship building and joint problem solving despite limited resources. Principals bear the responsibility of implementing the technical aspects of policy with fidelity. Leaders may achieve fidelity of implementation by employing the social aspects of policy as a complement. Due to differing contexts in organizations, both the technical and social frameworks influence the implementation of policy and therefore leaders should focus attention on both. Moreover, leaders cannot change supports, structure, and policy before stakeholders embrace it and acquire the capability to sustain improvements efforts without added resources.

With respect to policy makers, technical structure holds an important place in policy. Yet, professionals implement educational acts and reforms within the contexts of organizations. Districts and schools, as organizations, function in both technical and social circumstances. If practitioners, responsible for executing the mandates of educational legislation and efforts, doubt the necessity of policy or work in isolation, the fidelity of implementation suffers. When districts and schools focus on structural aspects of policy without consideration of social aspects, the intent of policy fails to be realized, and students suffer. We believe, due to our results, that policy makers should further consider schools and districts as social organizations and construct technical aspects of policy flexible enough to implement within the social context of schools.

In our study, we believe SNA emerged as a unique way of analyzing the social capital possessed in parent social networks. Regardless of the advantages of this perspective, SNA posed a number of limitations. SNA is not a theory or methodology, but a tool to examine problems. Researchers conduct SNA to meet the specific needs of their research and studies demonstrate variance in its use. Our study contained limitations of sample size, historical threat of using an interview, limited variance of teacher working conditions and achievement, and informant forgetfulness. Limitations of our study and SNA temper any conclusions drawn from our results. Despite the limitations, findings provided useful information for the researchers and hold implications for educators and we encourage researchers to embrace SNA and persist in analysis of social contexts in the educational system.

Implications for Future Research

Adding to this study, future research could analyze the social networks of all families of students with autism within the district and compare networks across schools with diverse demographics. In order to gather information at the state level, researchers might analyze social networks of families across districts with similar populations and demographics to gather information on networks across communities and identify areas of limited services. Another expansion would consist of analyzing the size and diversity of parent social networks of students with autism and conducting an in depth case study of outliers in order to understand their specific contexts.

Analyzing the networks of parents' district ties would enable researchers to explore the concept of operational effectiveness (Porter, 1996). Each tie brings increased size and diversity to the network and consequently more information and resources

(Bourdieu, 1986; Coleman, 1988). Understanding the resources provided by district ties through SNA would assist policy makers in advocating for or against core teams in which fewer professionals communicate with parents. Each core team member, equipped with the collective resources of the district, could provide parents with information and resources. Smaller teams might alleviate parents' stress and isolation by allowing the core team to form relationships and providing the parent with a few ties through which parents can gather information and resources (Staples & Diliberto, 2010; Whitbread et al., 2007).

Conclusion

Social networks of parents of students with autism varied both between different schools and within the same school. Results demonstrated that social capital varied with mean school SES, consistent with the frameworks of Bourdieu (1986) and Coleman (1988). Although the study supported past theories of social capital, we found that specific individual and school contexts associated more with the social capital of parents of students with autism. Parents with more than one child with autism reported larger, more diverse networks which we considered outliers. Analysis excluding the outlying networks resulted in larger and more diverse parent social networks in the school with the lowest percentage of students receiving ECE services and the school receiving extensive district support. Variance in parental networks emphasized the need for schools to develop relationships with parents in order to understand their specific needs and with district personnel through which they can access expertise.

Due to our findings, we suggest that schools need to establish practices leading to larger social networks of parents of students with autism rather than relying on the parent

to establish relationships and access support. Schools could add to parental social capital by connecting isolated parents with parents who understand how to navigate the system. Furthermore, consistent with the findings of Hess et al. (2006), despite the technical framework of IDEA, the absence of consistently high measures of parental ties to educational professionals implied uneven, minimal implementation. Results signified the need for leaders to complement the technical aspects of legislation and reform with social and relational aspects in order to increase the fidelity of implementation of acts created to improve student outcomes. Social context shapes any of our decisions and allows us to fulfill the promises of legislation.

EXECUTIVE SUMMARY

The system of public education in America typifies a complex organization, as it simultaneously constitutes a public good. This intersection of complexity and a public good conveys uniqueness to public education. Working to educate our youth within these parameters poses difficulties in attaining the lofty mission of educating all children at high levels. The success of meeting the educational needs of all our youth continues to elude as evidenced by the implementation of numerous educational reform efforts over the past several decades. Recognizing why the American public education system calls for reform with such regularity persists as a prominent challenge to stakeholders concerned with public education.

A conspicuous gap between the intention of the reform and the actual outcomes resulting from reform implementation continues to create a sense of bewilderment. Through reforms as the No Child Left Behind (NCLB) act of 2001, the federal government heavily influences educational goals and the strategies used to achieve those goals. Political stakeholders put considerable faith in technical aspects, such as creating educational policies that dictate expectations for student achievement. These federal policies then shape educational policies at the state level and then subsequently, the responsibility of interpreting and implementing these goals and policies resides at the local level.

A range of speculation regarding the obstacles of implementing reform that effectively yields positive educational outcomes subsists. For instance, one explanation stems from a lack of insight pertaining to the policy among those responsible for implementing the policy. A second conjecture concerning barriers to implementing reform entails contextual bias. A third assumption, which we contend in our study, pertains to the omission of the relational aspect to goal and policies. Laying the foundation to our argument, we used Bolman and Deal's framework (2008) to assist us in scrutinizing the recurring problem of reform failure from an alternative perspective. Bolman and Deal's framework views institutions through the lens of four areas: structural, human resource, political, and symbolic.

Of the four frames, stakeholders exploit the structural frame to promote systemic change. School accountability, standards, and research-based initiatives commonly depict the upshot of systemic change; however, emphasis upon these aspects typically occurs at the expense of a balanced focus upon all four frames. Our study proposed the examination of three additional components as a means for enhancing focus upon all of Bolman and Deal's frames. The working conditions experienced by teachers, the social capital of school leaders, and the social capital of parents served as three somewhat untapped areas for exploration in meeting the demands for school improvement.

The first component of our study explored the association between teacher working conditions and student achievement. The presence of a significant association between teacher workplace satisfaction and student achievement leads to opportunities for school and district administrators to identify school improvement strategies beyond the structural frame. By examining specific areas within the realm of teacher working

conditions, administrators delve into the human resources, political, and symbolic frames as they determine strategies for raising achievement. Implications for this portion of the study include school leaders placing value on the elements of teacher workplace satisfaction in efforts to effectively partner with the structural aspects of school improvement initiatives.

Teacher working conditions were defined in terms of eight constructs that comprehensively described the various aspects of teacher workplace satisfaction: time, facilities and resources, community support and involvement, managing student conduct, teacher leadership, school leadership, professional development, and instructional practices and support. Administration of the 2011 Kentucky Teaching, Empowering, Leading and Learning (TELL) survey to all teachers within Jefferson County Public Schools (JCPS) allowed for data analysis of each construct. JCPS, with a population of 99,919 students attending 159 schools, employs 6,921 teachers, of which, 86.5% completed the survey. Teachers responded to 85 questions organized within the constructs. School poverty levels, as well as responses to a summative question, "Overall, my school is a good place to work and learn," provided additional data for examination.

Student achievement data was based on results from the 2010 and 2011 Kentucky Core Content Test (KCCT). Students meeting academic standard in Kentucky earn ratings of proficient or distinguished. A school's average percentage of proficient and distinguished students in reading and mathematics was used to calculate a school-level achievement index for participating JCPS schools. Results from the 2011 KCCT assessment were compared with 2011 TELL data and poverty levels of schools to

determine the association between working conditions and student achievement. Additionally, 2010 KCCT results were subtracted from 2011 KCCT results and then compared with TELL data to determine any differences between the working conditions of schools experiencing gains, decline, or no change in achievement.

Findings of the study first included a strong correlation between the poverty level of schools and the 2011 KCCT scores, adding to the current research base the evident relationship between poverty and student achievement. Calculated separately, without the influence of school poverty, moderate to strong correlations existed between six of the eight constructs and the 2011 KCCT scores. Other than poverty, the working conditions constructs of community support and involvement and managing student conduct provided the strongest associations; however, small, yet statistically significant associations were also found with time, facilities and resources, school leadership, and teacher leadership. Only professional development and instructional practices and support produced no associations with achievement. When examining schools experiencing growth, decline or no change in achievement, no associations with teacher working conditions emerged.

The strength of poverty over working conditions emerged when collectively examining school poverty levels and the working conditions constructs through multiple linear regressions. For all schools, with poverty removed, community support and involvement accounted for 44% of the variance in student achievement and managing student conduct accounted for 12%. Multiple regression procedures that included poverty revealed its statistical power. Poverty accounted for 64% of the variance in student achievement, eliminating the influence of community support and involvement.

In addition, the managing student conduct construct accounted for 7%, with school leadership and time each explaining 2% of the variance on student achievement. Although without poverty, the working conditions constructs in sum accounted for 68% of the variance in student achievement, evidencing a significant relationship between working conditions and achievement; the presence of poverty, however, eliminated much of the influence of working conditions. Therefore, a causal relationship between working conditions and achievement was not warranted and the determination of whether positive working conditions resulted in high student achievement or high achievement resulted positive working conditions was inconclusive.

Although most working conditions constructs proved to be a function of the poverty level of a school, managing student conduct emerged as significant, even with poverty included, thus, substantiating the existence of an association. Collection and analysis of specific questions within the managing student conduct construct from the TELL survey in school improvement planning provides a means to address the non-technical aspects of school reform. For example, focus upon the support teachers receive regarding discipline in the classroom and the provision of a safe school environment expands school improvement initiatives beyond the structural frame and potentially leads to improved teacher perceptions related to managing student conduct. Such strategies do not replace, but compliment the structural requirements of reform, delving into the human resources and symbolic frames. These efforts lead to a balanced approach to school improvement.

A second component of our study proposed to examine systemic change using a less familiar perspective and method to explore the social capital of an elementary school

leader using social network analysis (SNA). We defined social capital as an investment in social relations with the presumption that it will yield benefits to an individual or group. Unlike organizational flow charts that provide a visual representation of the formal structure of an organization, SNA analyzes the informal relationships of an organization and displays this information using a visual image called a sociogram. These informal relationships, although powerful, often go unnoticed because the formal structure of an organization often conceals these informal relationships. Discounting what one cannot see can lead to undesirable consequences. The sociogram uncovers these invisible relationships within the organization to assist in avoiding the perils of unidentified informal relationships as well as providing an opportunity to take advantage of the valuable information mined using SNA.

Findings gleaned from this study revealed that each of the four schools portrayed distinguishable patterns of relationships. The density of the faculty network and principal centrality of the instructional networks related to advice in literacy of School HH indicated the densest networks. However, the centrality of the principal was ranked second in the network related to speaking candidly. Further examination, however, suggested that the faculty sought both the principal's instructional advice in addition to a multitude of informal leaders in the instructional networks related to advice in literacy.

The density of the instructional networks in the School LL signified the least cohesiveness of faculty than any of the other three schools. In addition, the centrality of the principal in School LL pointed out the lowest percentage of principal prominence in both instructional ego networks. However, the centrality of the principal was the highest in the network related to speaking candidly in spite of the fact that the faculty network

produced the sparsest structure related to speaking candidly. Additionally, few informal leaders in the instructional networks existed compared to the other three schools.

The study revealed four significant findings, three of which were specific to the literacy networks. One, the greater number of ties in literacy was associated with a higher level of student achievement. Two, each school's literacy network was more dense than the school's math network, suggesting a teacher's willingness to seek advice may be subject related. Three, informal leaders may enhance school improvement with respect to working conditions and achievement. Four, the quality of relationships is equally as important as the quantity, playing a decisive role in all aspects of school operations.

These findings suggest that principal centrality may suggest an implicit benefit of social capital to a school leader. Through high levels of social capital, the school leader plays an integral function in ensuring the quantity and quality of relationships among teachers. By building school capacity opportunities to increase the flow of information and resources may enhance student achievement. From these findings we believe supplementing the technical aspects of educational policy with less conventional relational aspects can provide the possibility of sustaining reform to improve student achievement.

Our study explored an additional relational aspect in education, the social capital of parents of students with autism. Due to the fact that autism represents the fastest growing disability area under IDEA and since parents of children with autism successfully advocate for services across the nation, we sought to understand the social networks of these parents. Through SNA, we measured social capital of parents in terms

of their social networks (Bourdieu, 1986; Coleman, 1988) with respect to their child's educational program, as well as the diversity of ties within and outside of the district. Contrasting IDEA's mandates for parent participation in the special education process, SNA allowed us to conceptualize the perceived educational team of parents in four schools. Although schools may adhere to the legal mandates of IDEA, we desired an understanding of parents' views of their networks. Despite the technical framework, if parent perceptions differed, the tenets of IDEA remain unrealized. We desired an understanding of whether the intent of policy, as carried out through the technical framework, led to fidelity of implementation.

Measures of network size simply consisted of counting the number of ties or the number of people with whom parents communicate about their child's education. In addition, we calculated diversity, the number of different roles represented in a parent's network, in two ways: diversity of roles in the district and in the community. We examined parents' networks outside of the school system because families utilize different resources to acquire services in the community than for the public good of a public education. As, Coburn et al. (2010) reported, diversity leads to increased access to information which parents would not otherwise access, affording parents an advantage.

Results indicated differences in size and diversity of networks across the four schools. Although we predicted differences, the results digressed from our hypotheses. Parental networks varied in size and diversity with one school emerging as an outlier. HH1 demonstrated larger social networks than all other schools. Discordantly, parents from HH2 reported vastly different sizes. With respect to diversity, parents in HH1 also reported more diverse district diversity, with the exception of LL1, and more diverse

community networks. In order to understand the above findings, we referred to demographic information on the population of each school. Free/reduced lunch (FRL) emerged as the probable statistic correlating with the difference in size. The outlying school served at least 33% less students receiving FRL than any other school, indicating an association between the size of a social network and SES.

Another captivating finding resulted from removal of outlier networks. We deemed three parents who reported larger and more diverse networks than others within the same school as outliers. Further analysis unearthed that each of the three outliers had more than one child with autism. Having multiple children with autism may lead to larger, more diverse networks because parents begin to understand the system and how to access resources. Due to this finding, we removed the outlying networks and recalculated the mean size and diversity measures of all schools. Removal of outliers resulted in decreased means in HH1 and LL2, as well as decreased overall means.

After recalculation, LL1 emerged with the largest mean size and diversity of all schools, for both district and community ties. Through review of differences between the schools in terms of students, teachers, and leaders, we came to understand that LL1 received extensive support from the district autism program. Due to the high amount of staff turnover in LL1, central office staff remained involved in the school's autism classroom for the past three years, spending at least one day per week in the classroom supporting students and staff. Additionally, in order to offset the impact of inconsistent classroom leadership, autism program staff developed program supports and attended IEP meetings at the school. Both the principal and central office personnel in the autism program believed it important to include familiar district personnel in the classroom and

in meetings. The supplemental assistance from the autism program, as well as the emphasis on including consistent support staff, perhaps added to the social capital of the school, in turn resulting in increased social capital for parents, measured by larger and more diverse networks. Coburn et al. (2010) reported that providing structures for support around improvement efforts results in increased ties and diversity.

Contrary to our predictions, parental social networks did not vary depending on teacher working conditions and academic achievement. We found that parent and school contexts played a greater role in size and diversity of parental social networks. Contexts found to associate with size and diversity of social networks were number of children with autism, percent FRL, percent of student with special needs, and expertise provided to a school. Within the framework of Bolman and Deal, we addressed findings of the SNA of parent social networks through each of the four frames: structural, human resource, symbolic, and political.

With respect to the structural frame, IDEA's mandates for parent participation, part of the act's technical framework, remained unrealized in the schools studied. Despite the technical structure, parent perceptions of their social network regarding autism programming for their child failed to meet the minimal standards put forth in IDEA. Parents reported a mean of just over three ties at the school concerning their child's educational program. Although IDEA requires schools to include a special education teacher, a general education teacher, and a district representative at every annual review meeting, data gathered demonstrated minimal adherence to these requirements, akin to Hess et al. (2006). Furthermore, only 29% of parents reported communicating with a general education teacher, indicating that if a general education

teacher participated in any meeting, 71% of the parents did not recall their participation. Many parents failed to include related service providers on their surveys, although the majority students with autism qualify for related services. This finding established either minimal adherence to the technical structures of IDEA or the failure of school personnel to explain their role in a student's program. Lipsky (2010) would relate either rationale possibly to "street level bureaucracy", blaming it on the structural limits imposed on educators. Leaders hold the responsibility of creating a school climate in which professionals adhere to structural aspects of improvement efforts through, not despite, relationships.

Failure to implement the technical aspects of IDEA also holds implications with respect to the human resource frame. Considering the human resources frame as analogous to family, when stakeholders differ in perceptions, problems arise. School personnel, charged by IDEA, must participate in program development and communicate their role in a child's program effectively in order to ensure the due process rights of the student. Due to the technical demands of legislation, educators often feel overburdened by paperwork and caseloads, leading to a coping mechanism that may not fulfill structural mandates, but helps them manage. IDEA mandates a team approach with families and schools working together, without providing fiscal support or time for the implementation of the social aspects necessary for fidelity of implementation. Within a team, everyone must develop relationships and trust. If parents fail to understand the role of professionals working with their child, they cannot work as a team and problem solve jointly, leading to an inability for the student with autism to succeed. Teams must come together and build relationships around the student with autism in order to effectively

share information and make group decisions. Unless this occurs, teams become ineffective and the student suffers. Lipsky (2010) stated, "…coping behaviors may widen the gap between policy as written and policy as performed…" (p. *xvii*).

Our study revealed multiple findings with respect to the symbolic frame. First, school personnel ineffectively communicating their roles may symbolize a lack of compassion and interest regarding the student. Furthermore, misunderstandings may arise if educational professionals fail to impress their role on parents, potentially leading to resentment or due process procedures. Secondly, when parents within a school differ broadly in their access to educational ties and resources, it symbolizes inequality. As a good or service, public education bears the charge of fulfilling the needs of all students, despite race, disability, or SES. Inequality of resources across parents symbolizes deficit in the attempt to meet the needs of all students.

Politically, our analysis of parental networks revealed many findings. With respect to parents in the school with the highest SES demonstrating larger and more diverse networks, the educational system continues to unsuccessfully to meet the needs of students faced with the most challenges. Our study analyzed networks around one subgroup of NCLB, students with disabilities. Nevertheless, findings revealed that network size and diversity related to SES, another subgroup population. Parents with the smallest, least diverse networks had children who fell in two subgroups with respect to education, possibly indicating that instead of assisting parents in accessing supports, schools relied on parents to advocate for themselves. Furthermore, the school provided with the most support from central office made the most impact on parent social networks, resulting in larger and more diverse networks, despite a high population of

FRL. Schools must have the ability to impact students without district support and to sustain the impact after central office assistance diminishes. Schools lacking the capacity to influence parental social capital demonstrate an unequal balance of power and influence within a district.

Conclusion

Collectively, our studies reinforce the notion that supplementing the existing technical framework with a relational framework may increase student outcomes (Mintrop & Trujillo, 2005; Spillane, Reiser, & Gomez, 2006). In connection with working conditions and achievement, building relationships with students may counteract the impact of disruptive behavior on achievement. With respect to social capital, the structural and relational social capital of an elementary school leader plays a key role in all aspects of school operations. A concerted effort on the part of the principal to establish quality relationships may increase school capacity. These operative relationships allow for opportunities to quickly transfer complex information and resources, thereby possibly increasing student achievement. Furthermore, schools have the capacity to increase parents' social capital by establishing relationships in school and providing parents with information and resources. Parent with larger and more diverse networks accumulate social capital, therefore allowing parents to advocate for services and support for their child. Our studies found that context matters with regards to students, parents, faculties, principals, and schools.

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Appendix A

Kentucky TELL Survey Constructs and Questions	
Time	a. Class sizes are reasonable such that teachers have the time available to meet the needs of all students.
	b. Teachers have time available to collaborate with colleagues.
	c. Teachers are allowed to focus on educating students with minimal interruptions.
	d. The non-instructional time provided for teachers in my school is sufficient.
	e. Efforts are made to minimize the amount of routine paperwork teachers are required to do.
	f. Teachers have sufficient instructional time to meet the needs of all students.
	g. Teachers are protected from duties that interfere with their essential role of educating students.
Facilities and Resources	a. Teachers have sufficient access to appropriate instructional materials.
	b. Teachers have sufficient access to instructional technology, including computers, printers, software and internet access.
	c. Teachers have access to reliable communication technology, including phones, faxes and email.
	d. Teachers have sufficient access to office equipment and supplies such as copy machines, paper, pens, etc.
	e. Teachers have sufficient access to a broad range of professional support personnel.
	f. The school environment is clean and well maintained.
	g. Teachers have adequate space to work productively.
	h. The physical environment of classrooms in this school supports teaching and learning.

	i. The reliability and speed of Internet connections in this school are sufficient to support instructional practices.
Community	a. Parents/guardians are influential decision makers in this school.
Support and	b. This school maintains clear, two-way communication with the community.
Involvement	c. This school does a good job of encouraging parent/guardian involvement.
	d. Teachers provide parents/guardians with useful information about student learning.
	e. Parents/guardians know what is going on in this school.
	f. Parents/guardians support teachers, contributing to their success with students.
	g. Community members support teachers, contributing to their success with students.
	h. The community we serve is supportive of this school.
Managing	a. Students at this school understand expectations for their conduct.
Student	b. Students at this school follow rules of conduct.
Conduct	c. Policies and procedures about student conduct are clearly understood by the faculty.
	d. School administrators consistently enforce rules for student conduct.
	e. School administrators support teachers' efforts to maintain discipline in the classroom.
	f. Teachers consistently enforce rules for student conduct.
	g. The faculty work in a school environment that is safe.

Teacher Leadership	a. Teachers are recognized as educational experts.
	b. Teachers are trusted to make sound professional decisions about instruction.
	c. Teachers are relied upon to make decisions about educational issues.
	d. Teachers are encouraged to participate in school leadership roles.
	e. The faculty has an effective process for making group decisions to solve problems.
	f. In this school we take steps to solve problems.
	g. Teachers are effective leaders in this school.
	h. Teachers have an appropriate level of influence on decision making in this school.
School Leadership	a. The faculty and leadership have a shared vision.
	b. There is an atmosphere of trust and mutual respect in this school.
	c. Teachers feel comfortable raising issues and concerns that are important to them.
	d. The school leadership consistently supports teachers.
	e. Teachers are held to high professional standards for delivering instruction.
	f. The school leadership facilitates using data to improve student learning.
	g. Teacher performance is assessed objectively.
	h. Teachers receive feedback that can help them improve teaching.
	i. The procedures for teacher evaluation are consistent.
	j. The school improvement team provides effective leadership at this school.
	k. The faculty are recognized for accomplishments.
	l. The school leadership makes a sustained effort to address teacher

concerns about leadership issues.
m. The school leadership makes a sustained effort to address teacher concerns about facilities and resources.

n. The school leadership makes a sustained effort to address teacher concerns about the use of time in my school.

o. The school leadership makes a sustained effort to address teacher concerns about professional development.

p. The school leadership makes a sustained effort to address teacher concerns about teacher leadership.

q. The school leadership makes a sustained effort to address teacher concerns about community support and involvement.

r. The school leadership makes a sustained effort to address teacher concerns about managing student conduct.

s. The school leadership makes a sustained effort to address teacher concerns about instructional practices and support.

t. The school leadership makes a sustained effort to address teacher concerns about new teacher support.

u. Teachers on the school council are representative of the faculty (i.e. experience, subject/grade, etc.)

v. Parents on the school council are representative of the diversity within the school community.

w. The school council makes decisions that positively impact instruction (i.e. curriculum, instructional practices, etc.).

x. The school council makes decisions that positively impact school staffing and schedules.

y. Overall, the school council provides effective leadership in this school.

Professional Development	a. Sufficient resources are available for professional development in my school.
	b. An appropriate amount of time is provided for professional development.
	c. Professional development offerings are data driven.
	d. Professional learning opportunities are aligned with the school's improvement plan.
	e. Professional development is differentiated to meet the needs of individual teachers.
	f. Professional development deepens teachers' content knowledge.
	g. Teachers have sufficient training to fully utilize instructional technology.
	h. Teachers are encouraged to reflect on their own practice.
	i. In this school, follow up is provided from professional development.
	j. Professional development provides ongoing opportunities for teachers to work with colleagues to refine teaching practices.
	k. Professional development is evaluated and results are communicated to teachers.
	l. Professional development enhances teachers' ability to implement instructional strategies that meet diverse student learning needs.
	m. Professional development enhances teachers' abilities to improve student learning.
Instructional Practices and Support	a. State assessment data are available in time to impact instructional practices.
	b. Local assessment data are available in time to impact instructional practices.
	c. Teachers use assessment data to inform their instruction.

d. Teachers work in professional learning communities to develop and align instructional practices.

e. Provided supports (i.e. instructional coaching, professional learning communities, etc.) translate to improvements in instructional practices by teachers.

f. Teachers are encouraged to try new things to improve instruction.

g. Teachers are assigned classes that maximize their likelihood of success with students.

h. Teachers have autonomy to make decisions about instructional delivery (i.e. pacing, materials and pedagogy).

Appendix B

Correlations for All Schools Between All Independent Variables and 2011 KCCT

	2011 KCCT	Poverty	Time	Fac. / Res	Comm. Support	Student Cond.	Teacher Lead.	School Lead.	Prof. Dev.	Instr Pract	Overall
2011 KCCT	1.00	-.80**	.24**	.18*	.67**	.61**	.27**	.28**	.01	.12	.49
Poverty		1.00	-.01	-.02	-.76**	-.46**	-.20*	-.21**	.09	.10	-.38**
Time			1.00	.63**	.29**	.55**	.67**	.65**	.67**	.73**	.57**
Fac./Res.				1.00	.35**	.56**	.60**	.63**	.68**	.67**	.51**
Com Sup					1.00	.66**	.59**	.62**	.35**	.43**	.60**
St. Cond						1.00	.72**	.73**	.51**	.54**	.78**
Tea Lead							1.00	.95**	.79**	.79**	.80**
Sch Lead								1.00	.81**	.79**	.81**
Prof Dev									1.00	.89**	.56**
Instr Pr										1.00	.56**
Overall											1.00

Note. * $p < .05$, one-tailed. ** $p < .01$, one-tailed.

Correlations for Only Elementary Schools Between All Independent Variables and 2011 KCCT

	2011 KCCT	Poverty	Time	Fac. / Res	Comm. Support	Student Cond.	Teacher Lead.	School Lead.	Prof. Dev.	Instr Pract	Overall
2011 KCCT	1.00	-.81**	.24*	.28**	.78**	.71	.37	.39	.19*	.24*	.50**
Poverty		1.00	-.02	-.07	-.82**	-.49**	-.28**	-.30**	-.02	-.07	-.36**
Time			1.00	.68**	.34**	.54**	.74**	.68**	.78**	.80**	.53**
Fac./Res.				1.00	.34**	.54**	.59**	.61**	.67**	.64**	.54**
Com Sup					1.00	.65**	.59**	.63**	.35**	.41**	.59**
St. Cond						1.00	.74**	.73**	.51**	.52**	.78**
Tea Lead							1.00	.95**	.78**	.76**	.82**
Sch Lead								1.00	.80**	.75**	.83**
Prof Dev									1.00	.87**	.62**
Instr Pr										1.00	.57**
Overall											1.00

Note. * $p < .05$, one-tailed. ** $p < .01$, one-tailed.

Correlations for Schools with Principal Leadership > 2 Years Between All Independent Variables and 2011 KCCT

	2011 KCCT	Poverty	Time	Fac. / Res	Comm. Support	Student Cond.	Teacher Lead.	School Lead.	Prof. Dev.	Instr Pract	Overall
2011 KCCT	1.00	-.82**	.28**	.22*	.71**	.64**	.35**	.36**	.05	.17*	.54**
Poverty		1.00	-.05	-.07	-.80**	-.50**	-.28**	-.29**	.04	-.03	-.42**
Time			1.00	.62**	.30**	.54**	.66**	.65**	.67**	.73**	.55**
Fac./Res.				1.00	.33**	.56**	.56**	.59**	.65**	.63**	.48**
Com Sup					1.00	.65**	.58**	.62**	.32**	.40**	.58**
St. Cond						1.00	.73**	.76**	.50**	.53**	.78**
Tea Lead							1.00	.95**	.77**	.76**	.79**
Sch Lead								1.00	.80**	.76**	.81**
Prof Dev									1.00	.87**	.55**
Instr Pr										1.00	.53**
Overall											1.00

Note. * $p < .05$, one-tailed. ** $p < .01$, one-tailed.

Correlations For All Schools Between All Independent Variables and 2011-2010 KCCT

	2011 KCCT	Poverty	Time	Fac. / Res	Comm. Support	Student Cond.	Teacher Lead.	School Lead.	Prof. Dev.	Instr Pract	Overall
2011 KCCT	1.00	.21**	.34**	.16*	-.12	.17*	.05	.05	.10	.14	.04
Poverty		1.00	-.01	-.02	-.76**	-.46**	-.20*	-.21**	.09	.01	-.38**
Time			1.00	.63**	.29**	.55**	.67**	.65**	.67**	.73**	.57**
Fac./Res.				1.00	.35**	.56**	.60**	.63**	.68**	.67**	.50**
Com Sup					1.00	.66**	.58**	.62**	.35**	.43**	.60**
St. Cond						1.00	.72**	.73**	.51**	.54**	.78**
Tea Lead							1.00	.95**	.79**	.79**	.80**
Sch Lead								1.00	.81**	.79**	.81**
Prof Dev									1.00	.88**	.56**
Instr Pr										1.00	.56**
Overall											1.00

Note. * $p < .05$, one-tailed. ** $p < .01$, one-tailed.

Correlations for Only Elementary Schools Between All Independent Variables and 2011-2010 KCCT

	2011 KCCT	Poverty	Time	Fac. / Res	Comm. Support	Student Cond.	Teacher Lead.	School Lead.	Prof. Dev.	Instr Pract	Overall
2011 KCCT	1.00	.15	.26**	.19*	-.01	.23*	.07	.08	.13	.13	.05
Poverty		1.00	-.02	-.07	-.82**	-.49**	-.28**	-.30**	-.02	-.07	-.36**
Time			1.00	.68**	.34**	.54**	.74**	.68**	.78**	.80**	.53**
Fac./Res.				1.00	.34**	.54**	.59**	.61**	.67**	.64**	.54**
Com Sup					1.00	.65**	.59**	.63**	.35**	.41**	.59**
St. Cond						1.00	.74**	.73**	.51**	.52**	.78**
Tea Lead							1.00	.95**	.78**	.76**	.82**
Sch Lead								1.00	.80**	.75**	.83**
Prof Dev									1.00	.87**	.62**
Instr Pr										1.00	.57**
Overall											1.00

Note. * $p < .05$, one-tailed. ** $p < .01$, one-tailed.

Correlations For All Schools Between All Independent Variables and 2011 KCCT

	2011 KCCT	Poverty	Time	Fac. / Res	Comm. Support	Student Cond.	Teacher Lead.	School Lead.	Prof. Dev.	Instr Pract	Overall
2011 KCCT	1.00	.22*	.36**	.19*	-.09	.17*	.09	.11	.15	.20*	.07
Poverty		1.00	-.05	-.07	-.80**	-.50**	-.28**	-.29**	.04	-.03	-.42**
Time			1.00	.62**	.30**	.54**	.66**	.65**	.67**	.73**	.55**
Fac./Res.				1.00	.33**	.56**	.56**	.59**	.65**	.63**	.48**
Com Sup					1.00	.65**	.58**	.62**	.32**	.40**	.58**
St. Cond						1.00	.73**	.76**	.50**	.53**	.78**
Tea Lead							1.00	.95**	.77**	.76**	.79**
Sch Lead								1.00	.80**	.76**	.81**
Prof Dev									1.00	.87**	.55**
Instr Pr										1.00	.53**
Overall											1.00

Note. * $p < .05$, one-tailed. ** $p < .01$, one-tailed.

Appendix C

Term	Definition	Operationalization
Social Network Analysis		
Whole network analysis	Measures ties between all possible actors in a population	• Faculties' perceived networks at four schools in JCPS
Ego network analysis	Measures ties of one actor, the ego	• Principals' perceived networks within their faculty • Parents' perceived networks around their child with autism's educational program
Ego	Focal actor	• Principal • Parent of child with autism
Alter	Within an ego network, the people who have ties with the ego	• Faculty • Parents' communication partners
Tie	Relationships between people	
Density	Cohesiveness of a network, calculated by the total number of ties between nodes divided by the total number of possible ties	• Sociocentric density of the school faculties • Egocentric density of the principals
Centrality	An actor's location within a network	• Principal's location within the network of the faculty
Isolate	An actor without any ties	
Pendant	An actor with only one tie	
Size	Number of ties an ego reports in his or her network	• Number of people the parent reported communicating with about educational programming for their child with autism
Diversity	Degree to which alters span functional areas	• Different professional roles accounted for in the ties of the parents; divided into district and community diversity
Sociogram		
Node	People or actors in a sociogram	• Principal and faculty • Parent and ties
Line or edge	Represents relationships	• Ties around Literacy, Math, and Candidacy • Ties with respect to educational program of child with autism

Note. Information compiled from Daly (2010) and Scott (2000).

Appendix D

Name of School	Q1a. ADVICE IN LITERACY	Q1b. Influence (L, M, or S)	Q2a. ADVICE IN MATH	Q2b. Influence (L, M, or S)	Q3a. SPEAK CANDIDLY	Q3b. Influence (L, M, or S)	**PERCEPTION SURVEY QUESTIONS**
Staff Member Name							**1a. Who do you turn to for advice**
							in literacy? (Place an "X" in Column B to
							identify each person.)
							1b. To what extent has this person
							influenced you as an educator? Write
							L = Little, M = Moderate, or S = Significant
							in Column C for each "X" in column B.
							2a. Who do you turn to for advice
							in math? (Place an "X" in Column D to
							identify each person.)
							2b. To what extent has this person
							influenced you as an educator? Write
							L = Little, M = Moderate, S = Significant
							in Column E for each "X" in column D.
							3a. With whom do you speak
							candidly about personal matters?
							(Place an "X" in Column F to identify
							each person.)
							3b. To what extent has this person
							influenced you as an educator? Write
							L = Little, M = Moderate, S = Significant
							in Column G for each "X" in column F.
							Thank you for your participation!

Appendix E

Please respond to the following prompts. You do not have to fill in every space. If you do not have enough room, please add to the bottom or back of the page. If you would like to provide this information over the phone, please fill out the consent form, return it to Trish Gallagher in the self addressed, stamped envelope, and provide a good time for Ms. Gallagher to call you, as well as a telephone number.

Phone Number:_____Good time to call_____

*Please list the **name** and/or **role** of people that you communicate with about your child's current educational program.*	*Role at the school (ECE teacher, General Education Teacher, counselor, etc.) or role in your life.*	How often do you communicate with this person (daily, weekly, monthly, or annually)?
Name:	Role:	
Name:	Role:	
Name:	Role:	
Name:	Role:	
Name:	Role:	
Name:	Role:	
Name:	Role:	
Name:	Role:	
Name:	Role:	
Name:	Role:	
Name:	Role:	
Name:	Role:	
Name:	Role:	

Comments:

Please return in the envelope provided by **March 1, 2012**.
Thank you for your time and information.

CURRICULUM VITAE

NAME:	Shannon L. Conlon
ADDRESS:	James E. Farmer Elementary School 5400 Billtown Road Louisville, KY 40299
DOB:	Louisville, KY – September 7, 1966
EDUCATION & TRAINING:	B.A., Biology University of Louisville 1985 - 1987
	M.A.T., Education University of Louisville 1987 - 1989
	Ed. D., Educational Leadership University of Louisville 2009 – 2012
AWARDS:	Recipient, Collaborative Efforts, University of Louisville, 2011 Recipient, Environmental Protection Agency (EPA) $10,0000 grant to build an outdoor science classroom, 2008 Math/Science Fellow, National Re: Learning Faculty, Coalition of Essential Schools, Brown University Recipient, Tate C. Page Educational Assistantship Award: Commendable academic achievement and leadership qualities Outstanding Young Women of America: recognition of outstanding ability, accomplishments, and service to the community Omicron Delta Kappa: recognition of conspicuous attainments and service in collegiate activities

Mortar Board: recognition of high scholarship, leadership and service
Golden Key National Honor Society: recognition of scholastic achievement and excellence

PROFESSIONAL SOCIETIES: Association for Supervision and Curriculum Development (ASCD)
Kentucky Association of School Administrators
Jefferson County Association of School Administrators
National Association of Elementary and Secondary School Principals (NAESP)
Kentucky Association of Elementary and Secondary School Principals (KAESP)

CURRICULUM VITAE

NAME: Trisha Hernandez Gallagher
ADDRESS: Van Hoose Education Center
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DOB: Lakenheath, England – May 1, 1969

EDUCATION & TRAINING:

B.S., Psychology
The Pennsylvania State University
1987 – 1991

M.Ed., Special Education
West Chester University
1993 – 1995

Ed.D., Educational Leadership and Organizational Development
University of Louisville
2009 - 2012

AWARDS: Research Louisville 2004, 3rd Place Poster Competition
Parent Engagement of Children with Autism

PROFESSIONAL SOCIETIES & ACTIVITIES:

Jefferson County Association of School Administrators

Kentucky State Autism Team
KY Family Guide for ASD

YMCA of Greater Louisville
Parent Advisory Board
Four Point Planning Basics, Strategic Planning

PUBLICATIONS:

Ruble, L.A., & Gallagher, T. (2004). Parental and caregiver satisfaction with services, utilization, and costs in Kentucky: A preliminary analysis for autism spectrum disorders. (Available from the Dept. of Mental Health and Mental Retardation Services, 100 Fair Oaks Lane, Frankfort, KY 40621).

Ruble, L. & Gallagher, T. (2004). Autism Spectrum Disorders: Primer for parents and educators. National Association of School Psychologists: Maryland.

PRESENTATIONS:

Various presentations regarding Autism Spectrum Disorders for Jefferson County Public Schools, family support programs, and other school districts in Kentucky

Ohio Center for Autism and Low Incidence 2011
Autism toolkit: A collection of interventions for supporting students with disabilities

Ohio Center for Autism and Low Incidence 2010
Using coaching to facilitate the use of evidence-based practices

Autism Society of America 2005
Early child social-communication/work skills: A transdisciplinary group approach

International Meeting for Autism Research 2005
Poster: *Parent Engagement*

NOTABLE WORK:

2010 Urban Redesign Challenge, University of Louisville Team Leader

KY Educational Television Panel Member: *About Autism: Diagnosis and Early Intervention*

CURRICULUM VITAE

NAME: Scott K. Hooper

ADDRESS: Jeffersontown Elementary School
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DOB: Savannah, TN – December 30, 1964

EDUCATION & TRAINING:

B.S., Mathematics
Murray State University
1983 - 1989

M.A., Secondary Education
Murray State University
1989 – 1993

Rank I, School Principal, Superintendent Certification
Murray State University
1993 - 1995

Ed. D., Educational Leadership
University of Louisville
2009 – 2012

PROFESSIONAL SOCIETIES:

Kentucky Association of School Administrators

Jefferson County Association of School Administrators

Kentucky Association of Elementary School Principals (KAESP)

PUBLICATIONS:

Hooper, S. K. (2010). Review of *working with and evaluating difficult school employees* by Eller, S. & Eller J. *Management in Education, 24*(4), 172-174.