ABSTRACT

GRANT, CARL PATRICK. The Relationship between Distributive Leadership and Leadership Effectiveness in North Carolina. (Under the direction of Drs. Thomas L. Alsbury and Tamara V. Young.)

As principals' responsibilities increase in quantity and complexity along with accountability demands for improved student achievement, some researchers argue that one person can no longer successfully lead a school; rather schools should be led in a collaborative manner with school staff members in shared decision-making through a distributed leadership model (Gronn, 2008). According to Leithwood and colleagues (2006), the core leadership functions in school systems that often get 'distributed' by principals using distributive leadership include setting the school mission, professional development programs, redesigning the organization, and managing instruction. The purpose of this study was to understand the extent to which these components of distributed leadership predict a principal's leadership effectiveness in schools. Specifically, this study was guided by four research questions: (a) What components of distributive leadership exist in North Carolina schools? (b) What is the relationship between different components of distributive leadership? (c) What characteristics of principals are associated with the use of distributive leadership in schools? (d) What is the relationship between the teachers' perception of the principal's use of distributed leadership and the principal's leadership effectiveness?

The study draws on data from 70,811 teachers and principals who responded to the 2008 North Carolina Teacher Working Conditions Survey. The results indicated that most teachers and principals in North Carolina schools agreed or strongly agreed that they had a role in three of the four components of distributed leadership: setting the direction,

redesigning the organization, and managing the instructional program. The findings indicated that four components of distributed leadership were moderately related to one another. Multiple regression analyses and hierarchical linear modeling indicated that female principals were less likely than they male peers to be perceived as allowing teachers to play a role in managing the instructional program. Furthermore, when it comes to developing people component, female principals were more likely, compared to male colleagues, to be perceived as allowing teachers to play a role in fostering the development of people. The race/ethnicity of the principal also was a significant predictor of the principal's use of certain components of distributed leadership. Most importantly, with the exception of redesigning the organization, distributive leadership components were related to leadership effectiveness. Of the different dimensions of distributive leadership, setting direction was the strongest predictor of leadership effectiveness. Overall, this study provides empirical evidence that distributive leadership is linked to leadership effectiveness in schools.

The Relationship between Distributed Leadership and Principal's Leadership Effectiveness in North Carolina

by
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DEDICATION

To Missy, my wife and love to the ends.

BIOGRAPHY

Carl P. Grant, also known as Patrick, was born in Memphis, Tennessee to Carl and Judy Grant and has three brothers, one older brother Mike and two younger brothers Jeff and Jerry. Mike is married to Caroline with four children and Jerry is married to Melanie with two children. Patrick is a graduate of Briarwood Christian High School in Birmingham, Alabama. He attended Auburn University in Alabama for undergraduate studies in chemistry. Patrick earned a master's degree in secondary science education from The University of Montevallo in Alabama and a master's degree in school administration from North Carolina State University in North Carolina.

Patrick began his high school science teaching in Alabama. He taught for seven years at Monroe Academy in Monroeville and Hoover High School in Hoover. Patrick moved to North Carolina and taught science for four years at New Hanover High School in Wilmington and Raleigh Charter High School in Raleigh. For the past four years, Patrick has been an assistant principal at Holly Springs Elementary School in Holly Springs, North Carolina. Patrick also taught School and Society, an undergraduate course for pre-service teachers in the College of Education at North Carolina State University. Patrick was a teaching assistant for advanced and applied graduate level research methods courses and research assistant in the Educational Leadership and Policy Studies Department.

Patrick's research and teaching interests include applied educational research methods, school-based leadership, organizational development, principal development, education policy, educational philosophy, teacher development and secondary science.

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> *"For from Him and through Him and to Him are all things. To Him be the glory forever!"*
>
> Romans 11:36

I give God all of the glory for the things that He has done and continues to do in my life. I constantly had to remind myself of the right reasons for doing my dissertation in order that I may become more influential in bringing greater excellence to different levels of educational systems. Within that perspective, I endeavored to work out my dissertation with the Lord in mind.

> *"Whatever you do, work at it with all your heart, as working for the Lord, not for men."*
>
> Colossians 3:23

Furthermore, the distributive leadership perspective was noted from a similar historical perspective for Moses in the following passage of the Old Testament:

> *"You and these people who come to you will only wear yourselves out. The work is too heavy for you; you cannot handle it alone … But select capable men from all the people ─ men who fear God, trustworthy men who hate dishonest gain ─ and appoint them as officials over thousands, hundreds, fifties and tens … That will make your load lighter, because they will share it with you."*
>
> Exodus 18:18-22

Jethro, Moses father-in-law, advised Moses in leading/judging the people so that he would not get exhausted and noted the concept of shared leadership among other capable individuals rather than the leadership resting with Moses alone.

My family continues to be a source of encouragement and love. I appreciate my

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I am also indebted to the faculty and staff in the Department of Educational Leadership and Policy Studies where I worked on coursework since beginning my master's of School Administration degree in 2002. I was privileged to have opportunities to work with and learn from exceptional and dynamic professors, scholars and practitioners in the department. Each of you has been instrumental in my development as a teacher, leader, and a scholar; and I appreciate all that you have done.

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CHAPTER 1

Introduction

As principals' responsibilities increase in quantity and complexity along with accountability demands for improved student achievement, some researchers argue that one person can no longer successfully lead a school; rather schools should be led in a collaborative manner with school staff members in shared decision-making through a distributed leadership model (Gronn, 2008). Although the educational system was designed using a hierarchical business model, with primary responsibility for quality resting with the administrator of the organization, there is increasing identification that leadership from multiple and varied school faculty and staff is needed to accomplish what all schools are called on to do (Leithwood & Mascall, 2008). Research suggests that increasing the influence of the teacher in schools has prospective effects for school improvement with teacher leadership moving to the forefront as a viable reform in schools (Mayrowetz, Murphy, & Smylie, 2007).

In defining leadership as 'influence,' Lashway (2006) concluded that everyone in an organization has at least some influence, suggesting that principals as leaders must rely on others to some degree in an organization in order to actually lead. Lashway (2006) suggests that a principal's primary influence in the organization was to distribute leadership throughout traditionally hierarchical levels within schools. The influence of all individuals in a coherent direction is necessary to create the level of success demanded in today's schools. The concept of leadership from everyone in the organization requires principals to adapt their management style. Coupled with effective teacher leadership, distributive leadership changes

the relationship between teacher leaders and their principals. However, distributive leadership does not advocate a loss of influence by the principal, but an intentional effort to remove the principal from sole authority at the top of a hierarchy and distribute genuine power throughout the organization.

According to Yukl (2008), school principals, and all other business leaders, must be equipped to modify leadership behaviors, strategies, and prescribed programs to meet challenges for increasingly tumultuous organizations. Effective school principals play an active role in the organizational and instructional processes of schools by taking the lead in changing the positional power of the principal, and the distribution of power among the administrative team and teacher leaders (DeMoss, 2002; Mulford & Moreno, 2006).

The importance of effective leadership in organizations has been recognized and widely studied (Burns, 1978; Covey, 1993; Graham, 1995; Kouzes & Posner, 1995; Senge, 1990). Modern organizations, including schools, are investigating new forms of leadership. Modern leadership forms move away from the solitary dominant leader to more personal viewpoint of leadership as a collective practice where organization constituents are equally significant in contributing understanding and intention (Drath & Palus, 1994; Rost, 1991). A CEO of a large company put it like this, “For too long we have had a model of leadership founded on the power of the person … to get the leadership we want requires a cultural change — away from the individualistic model toward a team approach” (Csoka, 1997, p. 7). Leadership is practiced by various individuals throughout any organization, regardless of whether they hold an individual title or position.

Increasingly, leaders have recognized that workers can provide valuable and important input into the successful management of any organization. As workers become 'empowered' they assume new leadership roles and responsibilities. This empowerment is best demonstrated in schools that are moving toward site based management where teachers and principals share governance (Peterson & Beekley, 1997). Sergiovanni (1996) pointed out that as teachers become more professional, different leadership is required of the principal because everyone in the school assumes more responsibility for change and improvement. More and more leaders in schools and businesses are shifting their view of workers as mere subordinates to empowered leader-followers who are part of a community working together toward a common goal (Senge, 1990).

Statement of the Problem

Leaders significantly impact overall organizational performance (Leithwood, Harris & Hopkins, 2008). Leadership, organizational performance, and leader effectiveness have tangential connections. In spite of a plethora of research on the need for teacher leadership, the effectiveness of principal's distributing leadership to teachers is scant, and the topic needs further investigation. There is limited empirical research examining distributive leadership and leadership effectiveness. Because many district, state, and school policies encourage principals to use the concept of distributing leadership, more research is needed concerning leadership effectiveness and distributed leadership. Additionally, there is limited empirical research that explores the relationship between principal characteristics with the use of distributive leadership. Principal attributes and their predictive ability for leadership effectiveness will add to the body of knowledge linking these aspects together. Little is

known about how the different components of distributive leadership are related and the components most, and conversely, least related to leadership effectiveness. Evaluating the relationship between the different components of distributive leadership help researchers and practitioners understand strength of relationships and potentially insight into how they are related.

Purpose of the Study

The purpose of this study is to understand the relationship distributed leadership and principal leadership effectiveness in schools. The study draws from a sample of teachers in public elementary, middle, and high schools across all geographic regions of North Carolina. This study also investigates the extent to which principal and teacher attributes are related to teachers' perceptions of distributive leadership and leadership effectiveness in their school.

This study seeks to learn how widespread distributive leadership is in North Carolina public schools. It also seeks to understand if distributive leadership and its specific components are related to leadership effectiveness. Observing principal attributes related to distributive leadership variables and leadership effectiveness will lend insight into the practice of distributive leadership in schools. Furthering our knowledge of the use of distributive leadership and those aspects related to leadership effectiveness will provide empirical evidence of those relationships. Research will give administrators practical insight about which aspects of distributive leadership are most important to being and effective leader.

Principals and other school leaders can benefit from knowing what elements of distributed leadership impact school leadership effectiveness. School leadership affects the

school improvement processes and reforms, and successful distributive leadership models can inform administrators how they can direct financial and personnel resources toward specific areas. Insight gained from this report can be used to help district and school administrators better understand how effective school leadership and distributive leadership are observed in schools.

Research Questions

The following questions guided this research study:

1. What components of distributed leadership exist in North Carolina schools?
2. What is the relationship between different components of distributive leadership?
3. What characteristics of principals are associated with the use of distributive leadership in schools?
4. What is the relationship between the teachers' perception of the principal's use of distributed leadership and the principal's leadership effectiveness?

Significance of the Study

To answer these research questions, a variety of statistical procedures were employed. Confirmatory factor analysis and correlation methods were used initially to ensure variable viability. Multiple regressions and hierarchical linear modeling are employed to discover relationships between principal and teacher attributes with distributive leadership and leadership effectiveness. Findings for this study provide reliable insights about distributive leadership. This study provides empirical data regarding the efficacy of theoretical models calling for more participative leadership, such as distributed leadership (Somech, 2005).

The substantive significance of this study includes increasing the available data concerning leaders' behaviors and subordinates' perceptions of those behaviors with regards to organizational variables and leadership styles (Yukl, 1994). This study is significant because it explores the relative contribution of the different factors of distributive leadership as they relate to leadership effectiveness. The study is the only one of its kind in North Carolina to discern distributive leadership patterns from the 2008 North Carolina Working Conditions Survey and principal leadership effectiveness. For this study, Leithwood and colleagues (2006) provide the specific theoretical model of distributive leadership that is recommended for application in school leadership models of this type.

This study has direct implications for practice providing insight into improvements for school principals and administrative development programs. This study offers guidance into the level of influence distributed leadership has on overall leadership effectiveness, thus supporting the school improvement process specified in the new North Carolina Professional Teaching Standards. In particular, the *North Carolina Professional Teaching Standards Commission* recommends that teachers work collaboratively to create professional learning communities in developing goals and strategies for school improvement and enhanced teacher working conditions (North Carolina Professional Teaching Standards, 2008). As teachers demonstrate leadership in schools, they can provide input and participate in determining the school budget, hiring of staff and the selection of professional development. The information gathered through this study may be useful in identifying effective leadership practices in schools.

Assumptions and Limitations

This study seeks to determine the relationship between a principal's use of distributive leadership and principal effectiveness. A limitation of this study is that some factors that influence a principal's ability to be effective are not controlled for in this study. Principal-specific factors that are not included in the model include principal's cognitive and personality traits as well as specific aspects of previous educational and training experiences. The socioeconomic status of the student population, the level of parental involvement, the size (enrollment), level (elementary, middle, high), and school resources are school factors that are not considered in the models in this study. The differentiated level of professional support for principals was also not explored in this study, including support from state, district, and school based employees such as the number and quality of assistant principals, classroom teachers, and support staff.

The study also assumed that distributed leadership behavior should and can be practiced by principals in schools. According to Wallace (2001), there are some noted assumptions about principals and schools one must consider in research studies measuring principal practices. An assumption must be made that principals have determined the school's vision with an organic strategy for inspiring teachers and staff to share in it, and have access to the resources needed to implement the vision. Another presumption of this study was that principals have the opportunity to create an environment fostering a change in teacher culture with predictable results.

There are some potential limitations concerning the validity of survey instrument used in this study. In this regard, it should be noted that the authors of the North Carolina

Teacher Working Conditions Survey have tested the instrument for its internal validity and reliability for data collection (Moir, 2009). Furthermore, we assumed that the teachers and principals responding to the survey were honest in their responses and that the teacher respondents were qualified to evaluate the principal's effectiveness. It was also assumed that teacher respondents are qualified to evaluate the principal's level of use of distributed leadership and that they understood the survey questions about their principal's use of distributed leadership.

The teacher respondents in the study are considered 'key informants' as primary individuals most knowledgeable about the school culture (Lecompte & Preissle, 1994), as well as being a fairly accessible population (Gilchrist, 1992). In looking at data related to teacher behavior and perception, the assumption is that teacher respondents can produce the most clear and accurate picture of the distributive leadership climate in the school. Teacher behavior patterns and attitudes form discernable patterns (Creswell, 2007) that can be accurately measured through the survey instrument used in this study, and constitute an acceptable data source for studies of this type. Finally, generalizing these research findings are assumed to be limited to settings and cultures similar to those being observed in schools within this study population.

Definition of Terms

Distributed Leadership is defined as decision making and influential practices performed by personnel at multiple levels in an organization instead of individual leaders at the top of an organizational hierarchy (Leithwood, Mascall, Strauss, Sacks, Memon, & Yashkina, 2006). Furthermore, distributive leadership is a perspective that involves

the activities of multiple individuals and/or groups in schools who work at guiding other staff. Distributive leadership also implies inter-dependency among leaders and teachers, rather than dependency of teachers on leaders (Spillane, Halverson & Diamond, 2004).

Principal is the head administrative officer of a school, appointed by the local school district's board, and licensed by the State of North Carolina. The principal is the school site director and is responsible for leading the school community and implementing educational plans.

Theoretical Framework

Distributed leadership theory is a specific type of participatory leadership, commonly described as creating an environment where the ownership of decisions and answerability is distributed among all constituents of the organization (Leithwood, Mascall, Strauss, Sacks, Memon, & Yashkina, 2006). Increased participation of staff in organizational decisions is a leadership application gaining recent popularity. Shedd and Bacharach (1991) reported positive results of distributive type leadership including (a) improved job satisfaction, (b) increased morale, (c) a stronger dedication to goals, and (d) a shared strength of mind within the organization.

Sergiovanni (1994) recommends that the hierarchical leadership view of principals in schools as the primary formal authority constrains school environments and proposed that schools be perceived as organizations where professional associations and common ideals become the basis for school improvement. In his description, teacher leaders in school communities come together, bound to a set of collective ideals. In becoming purposeful and

collective environments, schools provide the organizational contexts for developing a climate of leadership and professionalism. Principal leadership described by Sergiovanni (1994) begins to rely less on the individual decision making power of the principal and focuses more on the spread of decision making through others as an approach to leadership toward accomplishing the mission of the school.

Overview of Methodological Approach

This quantitative study uses respondent data from the 2008 North Carolina Teacher Working Conditions Survey. 104,249 educators responded to the Teacher Working Conditions Survey, representing 87% of educators across the state of North Carolina. Every traditional K-12 public school district in the state of North Carolina reached a district-wide response rate of at least 40 percent, with many achieving a higher response rate (Hirsch & Church, 2009). Confirmatory factor analysis (CFA) was used to test how well certain items in the survey represented distributive leadership constructs. The comprehensiveness of the sample allowed for generalizing the findings to schools in North Carolina and to states with similar contexts.

Descriptive statistics were computed about the distributive leadership components to answer the first research question, and thus determine the prevalence of distributive leadership in North Carolina schools. To answer the second research question, correlation coefficients were computed among the four dimensions of distributive leadership. Multiple regressions were conducted to examine the third research question, specifically, how well characteristics of principals predicted their use of distributive leadership. Lastly,

Hierarchical Linear Modeling (HLM) was used to determine the relationship between distributive leadership and leadership effectiveness.

CHAPTER 2

Review of Literature

Introduction

Leithwood and his colleagues (2006) provide a general theoretical framework for exploring the distribution of leadership in organizations, specifically schools. According to Leithwood and colleagues (2006), the core leadership functions in school systems that often get 'distributed' by principals using distributive leadership include: setting the school mission, professional development programs, redesigning the organization, and managing instruction. The over-arching hypothesis in this study is that leaders who distribute the four leadership functions of setting direction, developing people, redesigning the organization, and managing the instructional programs within schools, are perceived as more effective than those who do not.

Historical Perspectives of Distributed Leadership

It has been suggested that Gibb was one of the key 'originators' of the concept coined *distributed leadership* (Gronn, 2008). According to Gronn (2008), Gibb initiated use of the words 'distributed leadership' in writing about the subject in a chapter on leadership in the *Handbook of Social Psychology* in 1954. Gibb discussed leadership as not being centered on the supremacy of one person, stating: "There is still a tendency among psychologists and sociologists to think of every group as having a leader . . . however . . . unequivocal unipersonal leadership rarely, if ever, occurs" (Gibb, 1958, p. 103). According to Gibb, leaders and followers regularly trade roles and energetic followers often instigate leadership acts. Gibb confirmed that "leadership exemplifies many of the qualities of the followers and

the relationship between the leader and follower is often so similar it is difficult to determine who influences whom and to what degree" (Gibb, 1968, p. 206).

Other researchers previously asserted similar ideas by suggesting the need to remove distinctions between leader and member tasks in organizations with the idea of a dispersion of leadership functions among different constituents or groups in an organization. These researchers contend that a dispersion of leadership tasks among constituents without concentrating tasks in individuals or a few people exclusively for interdependent organizations. These researchers also reported a concept of leadership they defined as multilateral and shared in regard to responsibility (Benne & Sheats, 1948). Another set of researchers defined a core attribute of leadership as "the potential social influence of one part of the group over another, so that if one person had influence over fellow group member then that person has some degree of leadership" (French & Snyder, 1959, p. 118). These definitions of leadership elucidated a leader construct wherein the group standard is one of distribution with every member of a group having some level of influence over others, and where leadership is extensively dispersed throughout the group.

Katz and Kahn (1978) purported that the leadership components transfer upwards from subordinates the whole organization. They defined leadership as "the exercise of influence on organizationally relevant matters by any member of the organization noting that organizations are more likely to be effective when the leadership tasks are distributed" (Katz & Kahn, 1978, p. 571). The sharing of leadership functions results in a more effective use of human resources within the organization. The strategies Katz and Kahn imagined were that organizational leaders would use distributive forms of leadership through delegation and

shared decision making that put into effect a general openness to subordinates' influence, and increasing conditions for sharing information.

Schein (1988) discussed how official leaders and managers alone could not perform a wide range of tasks without distributing duties among group members. Furthermore, as a set of tasks are identified in a group, members can complete them and an effective organizational group is one in which the tasks are favorably distributed. Distributed leadership used in schools as a synonym for democratic leadership by giving more authority to teachers (Harris & Muijs, 2005).

Distributive leadership primarily implies a social distribution where a leader's power of decision-making is dispersed to all members of the school who are then viewed as a collaboration of leaders (Spillane, Halverson & Diamond, 2004). Distributive leadership implies interdependency rather than single leader dependency by leaders sharing responsibility with subordinates (Harris, 2003). In a sense, subordinate positions dissipate in distributive leadership as leadership is shared among many individuals in the organization.

Teacher leadership is promotes the idea that members of the organization can share leadership activities (Harris, 2003). Gronn's (2000) viewed leadership as a stream of influence rather than an explicit connection with a single leader. In a distributive environment, a larger number of constituents in the organization have a stake in the accomplishments of the school (Harris, 2003).

Distributed leadership theory promotes the decentralization of the leader as collective episodes in the organization (Harris, 2003). Leadership in this context is fluid rather than individually fixed as a specific role defined phenomenon within an organization (Gronn,

2000). Every individual can be a part of and demonstrate leadership in distributive organizations (Goleman 2002). This type of leadership does not imply that everyone in a group is a leader, but opens the possibility for a more collective leadership approaches (Harris, 2003). Distributive leadership is a collective trend where leadership is a stream of activities in which organizational constituent find themselves entangled (Gronn, 2000). Leithwood and colleagues (2006) determined that the core leadership functions in school systems that often get 'distributed' by principals using distributive leadership include: setting the school mission, professional development programs, redesigning the organization, and managing instruction. The next sections explore these different leadership functions within schools.

Distributed Leadership Function: Setting Direction

When it comes to setting direction, the vision of the school organization is the compass used in determining the way the school operates and develops. Faculty and staff participating in a distributive leadership format develop and agree on a shared vision. Leadership, instruction, and learning are expected to be derived from this shared vision. Developing a shared understanding about the organizational goals provides a sense of direction. A vision developed in isolation is less likely to influence followers because they have no part or stake in a vision that is thrust upon them. Sharing leadership reduces teacher seclusion and increases dedication to the collective good of the organization (Pounder, 1999), and involving more people in school processes. Leithwood and colleagues (2006) concluded that people are generally motivated by goals that (a) compel them in a personal way, (b) are difficult yet attainable, and (c) are able to identify with the shared vision. Thus, those

teachers who are the most connected to the vision and goals of the school are more likely to respond to and enact those goals.

Setting direction in developing a schools' vision requires fostering acceptance of a shared set of group goals (Leithwood et al., 2006) and bringing diverse stakeholders into the process. Some studies indicate that coherent vision is established and maintained when teacher leadership is supported by the direct involvement of teachers, as well as other school stakeholders, in the leadership work of creating the mission, purpose, and culture of a school (Neuman & Simmons, 2000). Somech (2005) noted that leaders, who influence followers to hold a strong philosophy and acceptance of the school's goals, provide a major catalyst to teacher commitment and retention. Within distributive leadership structures, teachers contribute to an assortment of leadership functions such as sustained instructional vision and monitoring program implementation (Firestone, 1989).

School improvement plans are generally interconnected with the school vision. Distributed leadership includes sharing decision-making when planning the school improvement plan. Some conclude that increasing teacher influence has the potential to effect school improvements and climate (Spillane, Halverson, & Diamond, 2004). Further, it has been concluded that a principal's success in the school improvement process can be significantly increased when the ownership and leadership is widely dispersed among teachers and staff (Fink & Brayman, 2006).

Glickman et al. (2001) developed a list of the characteristics of an improving school with distributed leadership at the top of the list. Recent literature on school reform suggests that improved learning outcomes resulted from the school improvement process from

distributed leadership approaches (Fullan, 2001; Hopkins, 2001). Furthermore, Little (1995) and Lambert (1998) advocated that a relationship exists between teachers as leaders, cooperation, and competency building for successful school planning and improvement.

Distributed Leadership Function: Developing People

Another important outcome of using distributive leadership in schools is the enhancement of the professional development of teachers and staff that can be accomplished by allowing teachers to determine the content of in-service professional development programs. When teachers exercise their intellect, personality, and represent suitable principles and practices, they become part of developing the people around them in the school and the organization (Leithwood et al., 2006). Distributed leadership provides the idea that professional development that is organically applied through common proficiencies and mutual ways of working to create an influential learning atmosphere (Harris, 2005). Harris (2005) noted that distributed leadership application would result in more stable organizations through constituents sharing expertise with one another and becoming more adaptable to change.

Teachers' skills can be developed through the influence they exercise on each other and from the influence of the principal. The interchange of experiences teachers enact with their leaders affects teacher capacities and motivations (Leithwood et al., 2006). Furthermore, when teachers' capacities and motivations are positively enhanced through leadership of others in the organization, they develop professionally and promote the development of others.

This type of leadership improves the quality of teaching and learning, and has generally been called ‘instructional leadership’ (Sheppard, 1996). Many educators believe that instructional leadership is at the heart of developing teachers in the organization of schools and research has indicated that personal attention by a leader, principal and/or teacher, to others; and the development and use of teachers’ capacities, causes an increase in levels of enthusiasm and optimism. At the same time, this attention reduces frustrations while conveying a sense of mission and purpose (McColl-Kennedy & Anderson, 2002). Furthermore, Griffin (1995) reported that distributed leadership results in constructive effects on teaching, school climate, and overall educational quality in schools.

Within teacher leadership literature, studies show verification of the constructive effects of distributed leadership on teachers’ self-efficacy and self-confidence measures (MacBeath, 1998), which could be argued, contribute to an overall increase in commitment to the organization. Evidence suggests teachers collaborate regarding quality practice and learning. Instructional collaboration tends to increase better quality teaching (Lieberman, Saxl, and Miles, 2000; Little, 1990). Other studies reported that teacher participation in decisions led to a decrease in teacher absenteeism (Rosenholtz, 1989; Sickler, 1988). Initial evidence suggests distributive communities foster teachers’ desire to be more consistently at work and less likely to leave the school.

Leadership that consistently supports teachers is necessary in a distributive leadership environment. When principals relinquish power in the school environment, it supports the development of the leader and followers. It is apparent that “specific tasks and functions would have to be retained by those in formal leadership positions, but the key to growing

distributed leadership resides in the involvement and support of teachers in cooperatively guiding and shaping instructional and institutional development" (Harris, 2005, p. 261).

Leithwood et al. (2004) suggested a teacher's positive participation in decision making builds loyalty; enhances job satisfaction, morale, and self efficacy; and erodes feelings of powerlessness and alienation. Distributive types of leadership have led to improved group innovation and attitudes (De Dreu & West, 2001), which promotes teachers' belief that their school is a good place to teach and learn. Heightened interest, innovation and attitudes along with distributive leadership behaviors generally increase teacher retention. Ingersoll (2007) showed the increased likelihood of a teacher's willingness to continue in their existing positions when distributive leadership is implemented.

Distributed Leadership Function: Redesigning the Organization

Distributive leadership occurs formally and informally in schools. In order for distributive leadership to become the 'lifestyle' of the school, the dynamics of the organization and how people work and function within the organization must change. The purpose behind newly redesigned organizations is a change in school culture and structure through the facilitation of the work by organizational members and the building of collaborative processes incorporated into the overall nature of the school's improvement agenda (Leithwood et al., 2006). The school organization is being redesigned, due to higher degrees of accountability, by programs such as 'professional learning communities' that has emerged from the theoretical concept known as 'learning organizations' (Leithwood et al., 1998).

Within redesigned organizations that incorporate distributive leadership, teachers need time to collaborate with colleagues, and should be provided opportunities to learn from one another. Research supports that strong professional relationships regarding school development (Little, 1990). Little (1990) suggested that professional interaction provide the foundation for developing collective ideas and for producing distributive leadership approaches. Rosenholtz (1989) argued for teacher professionalism and collaboration as a conduit for producing positive change in schools. He observed that effective schools have stronger connections between what is important and behaviors between teachers and principals. These behaviors typically result in better school performance (Rosenholtz, 1989).

Ovando (1994) found that common times for teachers to meet were a primary component of successful schools. In order for teachers to regularly improve their practice, they need to be given specific and dedicated time to collaborate with one another. Teachers need time and opportunity to share and expose their classroom practices in order for there to be a transfer and distribution of expertise within schools (Harris, 2005). In order for teachers to act as instructional leaders, time and the opportunity to interact with peers is necessary for advantageous collaborative influence (Harris & Muijs, 2005).

As organizations become redesigned in light of distributive leadership, teachers are given opportunities to be a part of group decision making. Distributive leadership includes the idea that teachers' have influence over and participate in school-wide decisions (Wahlstrom & Louis, 2008). Research by Harris and Muijs (2005) found distributed leadership results in widely-shared decision-making processes viewed as the responsibility of groups rather than the individual. Distributed leadership initiatives facilitate genuine and

collective decision processes (Neuman & Simmons, 2001).

Distributive leaders provide teachers opportunities for involvement and to exercise influence on decisions. Teachers' participation promotes commitment to decisions and increases teacher's eagerness to follow them (Somech, 2005). Dynamic participation increases involvement and commitment due to the fact that individuals place more trust and are more accepting of information personally ascertained (Armenakis et al., 1993; Beckhard & Harris, 1987; Fishbein & Azjen, 1975; Fullan, 1997). Distributed leadership proponents suggest that teachers' participation is sustained because of the personally relevancy they enjoy through personal implementation of ideas rather than responding to the schemes of others.

Teachers have important information to share, and their participation advances professionalism. When teachers share in decision making with leaders, they become committed to the decision made since they have become a part of the process. Sergiovanni's (2001) concept of 'leadership density' is helpful in promoting the idea whereby a larger number of people are involved in the work, trusted, exposed to innovative ideas, and participate in the creation of new understanding in schools for greater leadership density among more constituents.

Lastly, within the redesign of the organization for leadership distribution, an environment of trust must be developed between leaders and followers. Trust in the organization is concerned with relationships and organizational behavior. Trust among subordinates and trust in leaders has become important for organizations to be more collaborative in nature (Tschannen-Moran, 2004). Tarter, Bliss and Hoy (1989) found

principal behavior and faculty trust correlatives when principals support teachers. Schools with high levels of engaged teachers enjoyed higher levels of trust in fellow colleagues. Distributive forms of leadership aligned with principal behaviors affected trust (Louis, 2007). Schools with high degrees of trust display more collaborative decision making with improvement for student learning more dispersed (Wahlstrom & Louis, 2008). Generally, organizations with high degrees of trust observe personnel comfortable to seek help and learn from other teachers. Trust is a prerequisite for effective helping relationships between professionals (Bryk & Schneider, 2002).

Distributed Leadership Function: Managing the Instructional Program

Distributed leadership incorporates activities of multiple participants in guiding others in the process of changing instructional practice. Furthermore, distributed leadership is particularly helpful in providing widespread quality management of the instructional program in schools where multiple groups guide and mobilize staff in instructional change and improvement (Spillane et al., 2004). Instructional leadership and effective school improvement processes include areas such as decisions about staffing, monitoring school improvement strategies and allocating resources that foster school improvement (Leithwood et al., 2006).

Managing the instructional program in the distributive leadership framework requires teachers be involved in the selection of instructional materials, resources and teaching techniques, and setting grading and student assessment practices. Teacher leaders focus on issues of curriculum, instruction, and classroom management improving peer teachers practice (Harris & Muijs, 2005). Teacher leaders can fill a wide range of roles and tasks in

terms of school leadership and accomplishment of tasks. Barth (2001) shared that teacher leadership is indispensable, and teachers need to be at least involved in functions like textbook selection, curriculum decisions, student behavior standards, tracking of students, professional development, promotion and retention policies, budgets, teacher evaluations, selecting, and hiring new staff including new administrators. Smylie (1992) indicated that teacher leadership roles include being a mentor or lead teacher, working on school improvement teams, leading principal advisory councils, and developing and implementing new curriculum and instructional programs.

Teacher leaders play a role in improving the quality of education by being leaders beyond the classroom. They contribute to a community of teacher learners by influencing others to improve their educational practice (Katzenmeyer & Moller, 2001). Academic optimism occurs where teachers become interested in better quality instruction associated with pre-planned approaches from principals to leadership distribution (Mascall et al., 2008). A central purpose of teacher leadership is to improve the teaching profession and assist in school reform (Smylie & Denny, 1990). Distributive leadership mechanisms in managing the instructional program also must involve teachers in the hiring of new teachers and deciding how the school budget is spent. Many teacher leaders in distributive leadership are involved in the organizational work by setting discipline standards for student behavior, making budget decisions, and addressing personnel concerns (Harris & Muijs, 2005).

Benefits of Distributed Leadership

According to researchers, a number of benefits are derived from the use of distributed leadership by principals in K-12 schools (Harris, 2005 & 2008; Macbeath, 2001; Mascall,

2008). One organizational benefit of distributed leadership may simply follow the old adage "two heads are better than one." Indeed, the combined capacities of more members can capitalize on a range of individual strengths as a collective and the organization can also becomes more interdependent. Increased participation in decision making from more members will generally lead to greater commitment to organizational goals and strategies (Leithwood et al., 2009). Lastly, organizations enjoy an increase in overall individual determination that improves members' experience of work (Leithwood et al., 2009). Gronn (2008), reflecting back on the development of distributive leadership, preferred its application for positive organizational outcomes for quality decisions with commitment because more people are contributing to the decisions. Staffs in schools often feel entitled to contribute to decisions about school developments that affect their work efforts. Collaboration for the purpose of school excellence through distributive leadership mechanisms spread leadership among teachers and staff in schools (Wallace, 2001)

Some argue that distributive leadership is morally just and necessary because we live in a democratic country where personal rights are given precedence (Blase and Anderson, 1995; Bottery, 1992; Sergiovanni, 1996; Starratt, 1995; Wallace, 2001). Participating in distributive leadership has potential intrinsic value providing fulfilling experiences for those involved in which an atmosphere of comradeship in working with colleagues can be produced (Nias, Southworth & Yeomans, 1989).

As stated previously, distributive leadership environments can provide staff the opportunity to define professional development and career goals (Wallace, 2001) and provide opportunities for informal and supplemental learning (Marsick & Watkins, 1990; Wallace,

1991). As a result, casual workplace ‘learning’ has the potential to improve on-the-job performance (Wallace, 2001). Distributive leadership is purported to cause great effects on “teacher leaders themselves, as they gain leadership skills, improving instructional practices, and become more fully engage in their work” (Lashway, 2006, p.253). Therefore, teacher leadership increases teacher professionalism and improves the organizational vigor and atmosphere in schools (Murphy, 2005). Furthermore, as educators of children, staff working relationships an act as role models in fostering each child’s social development in representing collaborative working relationships for their students to follow (Wallace, 2001).

Distributive leadership has the potential to contribute to effective principals because school staffs are interdependent where “every member has a contribution to make as leadership tasks can be fulfilled only with and through other people” (Wallace, 2001, p. 154). Extensive interdependence and personal ownership of school policy decisions is at the heart of building professional learning teams in schools (Bell & Rhodes, 1996) if staff are working in distributive environments. Empowerment through shared commitment enables staff to accomplish more together than as individuals (Sergiovanni, 1990; Starratt, 1995). Wallace (2001) noted,

> In these circumstances they can achieve an optimum degree of synergy, which may be defined as group members combining their individual energies to the best of their ability in order to achieve shared goals. Advocates assume that staff will adhere to these principles if given the chance: those offered their entitlement will take it up; they will act as good role models for students; and they will collaborate and generate synergy. (p.154)

Detractors of Distributed Leadership

Distributed leadership in schools has been reported to produce negative effects as well, including a reduction in student engagement (York-Barr & Duke, 2004). In addition, expanding leadership across organizational members can complicate the development of a single-minded clarity of organizational purpose and sense of mission. Distributive leadership has also "resulted in tensions and conflicts between competing leaders" where these multiple leaders create an increase in "conflict as their competing visions, models and ideas of 'success', 'good practice', appropriate performance measurements and departmental and individual needs become more evident" (Storey, 2004, p. 253). Teacher cultures frequently contain individuals with incompatible ideologies, such as contradictory beliefs and values that often coexist only in tension (Wallace, 2001).

Hargreaves (1994) found that attempts at fostering collaborative teacher climates simply encouraged the idea of 'contrived collegiality' rather than genuine collaborative school climates which arise organically outside of the distributive leadership agenda. Distributive leadership that led to empowering other staff did not guarantee teachers would take up this leadership entitlement. Research consistently found that a remarkable number of small pockets of teachers in an organization will remain uncommitted to collaboration and may at times attempt to undermine distributive leadership efforts among fellow teachers (Torrington & Weightman, 1989).

At times, the spread of leadership may cause a lack of certainty about what needs to be done for improved productivity in schools (Leithwood & Jantzi, 2000; Timperley, 2005). Teachers "contradictory beliefs and values reflected the wider social and political context

which impacted reciprocally on team members' use of power and affected the extent to which leadership was shared between team members" (Wallace, 2001, p. 153).

Another noted negative side effect of distributed leadership in schools is the increase in the burdens and responsibilities of teachers without actually increasing their power. Some have argued that distributing leadership was merely a subtle strategy for indoctrinating among staff values and goals of more powerful members in the organization (Ritchie & Woods, 2007). Tannenbam (1961) showed limited support for contributions of 'democratic' organizational control and general organizational successes. One research study found that "the main effects [for distributive leadership] are weak and positive and contingent on many other conditions" (Miller & Rowan, 2006, p. 220) in regards to the effectiveness of distributive leadership.

Storey (2004) presented many crucial unanswered questions about distributive leadership and cited a serious lack of empirical research. Some unanswered questions include:

> How widely should leadership be distributed?; Who determines the distribution?; What kinds of tasks or roles are to be distributed?; How will it fare in practice when competing against the dominant cultural model of the top-down leader who is willing to assume responsibility and to show the way?; What are the other implications of the distributed mode?; What dynamics are unleashed when leadership is exerted a multiple points in a school organization? (p. 253-254)

Wallace (2001) provided additional unanswered questions concerning the difficulty of implementing distributed leadership models in schools. Those questions include:

> How far should principals be expected to risk sharing leadership, since it negatively effect their reputation, colleagues' work, and ultimately children's education? And, if the risk of ineffective leadership can be reduced by limiting the amount of sharing, is it justifiable for principals to adopt a contingency approach, varying the degree of sharing as the situation evolves? (p. 157)

Overall, few empirical research explore the full meaning and implications of distributed leadership (Lashway, 2006; Storey, 2004). Lack of a broad range of empirical research leaves the definition of distributed leadership blurred, and its possibilities and practices in schools are left, at times vague in description (Lashway, 2006).

Potential Variables Influencing Leadership Effectiveness

Because the principal is the 'key educational leader' and has the most opportunity to exercise leadership, it seems important to define leadership effectiveness and note attributes that may affect a principal's capacity to lead. Invariably, personal traits contribute to leadership effectiveness. Effective leaders can be defined as "those persons, occupying various roles in the school, who work with others to provide direction and who exert influence on persons and things in order to achieve the school's goals" (Leithwood & Riehl, 2003, p. 9). In other words, effective principals facilitate effective schools for teachers and ultimately student's success. Furthermore, Leithwood and his colleagues (2008,) claimed that "school leadership is second only to the classroom teaching as an influence" (p. 27) on schools and learning.

Gender and ethnicity result in unique perspectives with noted effects on leadership. Some studies conclude that gender or ethnicity provides differences for how leaders

persuade, act sensitively to others, or take certain types of risks in performing leadership duties. Other studies have found little differences between men and women. Some found differences in orientation toward tasks and various styles of leadership in organizations (Smith & Piele, 2006). Some researchers have noted that female principals, at times, are rated higher on leadership effectiveness ratings (Fowler, 1991). Kruger (1996) noted differences in leadership between male and female principals. There have also been noted differences between Black, White, Asians and Hispanics on effectiveness ratings (Fowler, 1991).

A final factor considered affecting leadership effectiveness is the principal 'years of experience.' Principals with less or more years of experience have seen difference in effectiveness ratings (Fowler, 1991). Oddly, some principals have been rated more effective with only a couple of years of experience. Experience and training provides leaders with perspective and philosophical orientation that guide how to think about their skills and what to do in leadership situations (Smith & Piele, 2006).

Invariably, personal traits contribute to leadership effectiveness, yet no definitive list of attributes and distinguishing qualities of effective leaders is identified from existing research (Clark & Clark, 1990). For this study, some of the demographic information listed previously will be specifically observed and evaluated for their effects on leadership effectiveness and distributive leadership behaviors. Since there is limited knowledge or any definitive list of attributes among effective leaders, the following section discusses the demographic information from the survey with theoretical basis and some new characteristics with little or no theoretical support. Looking at new and different characteristics will help to broaden knowledge and provide new understanding about principals as leaders.

The North Carolina Teacher Working Conditions Survey instrument provides questions linked to the theoretically and empirically derived attributes reviewed in this chapter indicative of distributed leadership and effective leadership. Principal and teacher attributes incorporated in this study include: gender, years of experience, ethnicity, level of school (highest degree), and National Board for Professional Teaching Standards certification. These are the demographic factors that will be analyzed with key variables (attributes) supporting leadership and subordinate traits from previous empirical research on effective leadership and use of distributed leader methods.

Proponents of distributed leadership are encouraging organizations and schools to rely on leadership from many members of the organization, instead of the principal and other administrators alone (Leithwood, et al., 2006). Distributive leadership in schools is purported by some to help schools run more efficiently and effectively. The argument is that in order for schools to be led well, the size of the task facing school leaders is too great for any one individual to handle, and leadership must be expanded to include teachers. While proponents believe the multifaceted aspect of distributive leadership make it necessary in schools, the myriad of tasks and roles fulfilled by teacher leaders make a single, all encompassing definition of teacher leadership elusive.

Among the events, environmental conditions and community that encourage and support distributive leadership on a school campus, the role of the principal is the most powerful. It can be argued that a system as complex as a school would benefit richly from a continual focus on using distributive leadership. This chapter has reviewed core leadership functions in school systems that including components of setting directions, developing

people, redesigning the organization, and managing the instructional programs (Leithwood et al., 2006). Within distributive leadership, these four leadership functions are what principals 'distribute' in schools. Leaders who distribute the four leadership functions within schools are perceived as more effective than those that do not.

Ultimately, the principal decides if teachers are to be included in school leadership. Barth (2001) and Leithwood et al. (2004) discussed the important role the principal plays in supporting teacher leadership in the form of distributing leadership to staff and teachers. Teachers touch the school at the very core of its existence — in the classroom. Teachers more than any other member of the education community; know what is needed, what will work, and how best to implement reforms. The list of possible benefits and products of distributive leadership make it worth the effort to create and sustain the inclusion of teachers and staff in school leadership.

CHAPTER 3

Methodology

Introduction

This chapter describes the methods used to study the relationship between distributive leadership and leadership effectiveness. The methodology explained in this chapter was designed to address the following questions:

1. What components of distributed leadership exist in North Carolina schools?
2. What is the relationship between different components of distributive leadership?
3. What characteristics of principals are associated with the use of distributive leadership in schools?
4. What is the relationship between the teachers' perception of the principal's use of distributed leadership and the principal's leadership effectiveness?

Population and Sample

The data set was drawn from the population of teachers and principals in North Carolina public schools-representing all levels (elementary, middle, high), enrollment sizes, and socioeconomic statuses-who responded to the 2008 North Carolina Teacher Working Conditions Survey. The initial survey was made available to all certified educators throughout the state of North Carolina, and 104,648 educators participated in the original survey, which represented 87% or 118,505 of the total certified educators in North Carolina (Hirsch & Church, 2009). In this study, respondents who were not teachers or principals were removed from the sample. Cases in the data set were removed for schools if there was not a complete set of teachers with specifically a principal respondent. Charter and special schools

were also removed from the data set. The final data set for this study included 70,811 teachers and principals in North Carolina of the 100,024 population (North Carolina Department of Public Instruction, 2008).

Table 1 shows the demographic details of the respondents in this study as compared to the total population of teachers and principals in North Carolina. The respondents to the survey used are fairly representative of the total population of certified school personnel in North Carolina. Specifically, the respondents were a good representation of the total population in terms of gender and ethnicity of teachers and principals across the state of North Carolina.

Table 1

Demographic Comparison of Certified Public School Personnel in North Carolina for 2007-08 and Final Respondent Data Set Derived from the 2008 North Carolina Teacher Working Conditions Survey Sample (NCTWCS)

Demographic Details	North Carolina 2007/2008 Personnel[a]		Respondent Data Set Derived from the 2008 NCTWS	
	N	*P*	*n*	*P*
Teachers & Principals	100,024	N/A	70,811	N/A
Males	20,601	20.6	13,127	18.5
Female	79,423	79.4	56,762	80.2
Gender - Missing data	N/A	N/A	922	1.3
White	82,498	82.5	58,202	82.2
Black	14,418	14.4	8,232	11.6
Other Ethnicity	3,108	3.1	3,590	5.0
Ethnicity - Missing data	N/A	N/A	787	1.1
Principal	2,348	2.3	1,829	2.6
Teacher	97,676	97.7	68,982	97.4

Note. a North Carolina Department of Public Instruction. (2008). North Carolina public schools: Statistical profile 2008. Raleigh, NC: Author.

Data Collection

Yukl (1994) suggested research concerning leader and specifically subordinates' perceptions of a leader's behavior as being useful in investigating linkages between

organizational variables and leadership approaches. In this research study, the perceptions of the teachers were the primary area of interest as well as principal characteristics. In order to assess the degree the North Carolina Teacher Working Conditions Survey measures the theoretical constructs intended specifically components of distributive leadership specified Leithwood et al. (2006), factor analysis of the sixteen items was conducted to determine if the items separated into discrete factors (Moir, 2009). Previous renditions of this survey that analyzed similar teaching conditions items had indicated a strong overlap between the school leadership and educator leadership sections of the survey (Moir, 2009).

The items on the survey used five point Likert scale responses ranging from 'strongly disagree' to 'strongly agree.' The online survey was administered in spring of 2008 from the North Carolina Teacher Working Conditions Survey website. Educators were given school codes to log in on the website in order to respond to the survey questions.

Survey Instrument

The authors of the survey used principal components analysis and varimax rotation procedures with eigen values of one or greater as criteria for factor extraction in determining final survey questions. See Moir (2009) for details about instrument reliability. In the 2008 North Carolina Teacher Working Conditions Survey, a five factor model was found related to leadership, facilities and resources, professional development, time and decision making. Questions from two of the five factors used in the study were primarily related to the leadership factor and the decision making factor. The leadership factor included questions regarding school leadership and educator leadership sections. The decision making factor included sets of questions within the educator leadership section of the survey that asked

about the role teachers played in making decisions making about classroom teaching and school matters (Moir, 2009). Reliability was assessed for subscales within the survey on the five identified factors of the survey, yet this study is primarily concerned with two of those factors: leadership had a Cronbach's $\alpha = .93$ and educator leadership had a Cronbach's $\alpha = 0.84$ (Moir, 2009).

Variables of Distributive Leadership

Confirmatory factor analysis (CFA) tested how well a subset of measured variables represented the four distributive leadership constructs. According to Garson (2009a), CFA sought to determine the number of factors and there loadings for the indicator variables and how they conform to expectation on the basis of our pre-established theory, in this instance distributive leadership functions (factors) ascribed by Leithwood and his colleagues (2006). The assumption was that each factor was associated with a specified subset of indicator variables from the NCTWCS items. For the confirmatory factor analysis, items were hypothesized beforehand regarding the number of factors in the model and posing expectations about which variables will load on which factors (Kim and Mueller, 1978). Overall, CFA seeks to determine if measures (items) suggested do in fact really belong together in comprising the distributive leadership functions.

Confirmatory Factor Analysis and Item Reliability Analysis

Drawing on literature (Leithwood et al., 2006), items from the survey were assigned to the four areas of distributive leadership. To confirm that the appropriate items were indeed representing the same underlying construct, factor analysis was carried out on sixteen distributive leadership related items taken from the 2008 North Carolina Teacher Working

Conditions Survey. The dimensionality of the sixteen items was analyzed using principal component factor analysis. Three criteria were used to determine the number of factors to rotate: the a priori hypothesis that the measure was unidimensional, the scree test, eigen-values and the interpretability of the factor solution (Green & Salkind, 2005).

Careful consideration of these criteria led to the identification of four factors which were then rotated (i.e. varimax rotation). The rotated solution, as shown in Table 2, yielded four factors that aligned with the literature for setting direction (SD), managing the instructional program (MIP), redesigning the organization (RO) and developing people (DP). The four significant factors extracted explained 56% of the total variance and item reliability analysis were also performed.

Factor 1 labeled setting direction (SD) included seven items with a Cronbach $\alpha = .91$ and explained 23% of the variance. The three items in Factor 2 pertain to managing the instructional program (MIP) have a Cronbach $\alpha = .77$ and accounted for 11% of the variance. The three items in Factor 3 pertained to redesigning the organization (RO) have a Cronbach $\alpha = .73$ and accounted for 11% of the variance. The three items in Factor 4 developing people (DP) have a Cronbach $\alpha = .72$ and explained 10% of the variance. The Cronbach alpha's for each of the four distributive leadership constructs were above .40, suggesting that the scale scores were relatively reliable for respondents like those in the study (Green & Salkind, 2005). The results from CFA and our item reliability analysis enabled the creation of a mean scale score (composite variables) associated with each of the distributive leadership functions used for the statistical analysis used to answer the research questions.

Table 2

Factors of the Distributive Leadership Function With Items and Their Factor Loadings

2008 NCTWCS Items	Factor(s)			
	1 (SD)	2 (MIP)	3 (RO)	4 (DP)
The school leadership consistently supports teachers.(a)	**.787**	.191	.189	.141
There is an atmosphere of trust and mutual respect within the school.(a)	**.744**	.195	.176	.145
The faculty and staff have a shared vision.(a)	**.714**	.147	.253	.155
The school leadership makes a sustained effort to address teacher concerns about empowering teachers.(a)	**.700**	.216	.295	.224
The faculty has an effective process for making group decisions and solving problems.(a)	**.678**	.189	.248	.287
Teachers are centrally involved in decision making about educational issues.(a)	**.606**	.232	.252	.340
Opportunities are available for members of the community to actively contribute to this school's success.(a)	**.512**	.126	.255	.149
Teachers have a large role in devising teaching techniques.(b)	.220	**.813**	.107	.109
Teachers have a large role in setting grading and student assessment practices.(b)	.147	**.628**	.119	.135
Teachers have a large role in selecting instructional materials and resources.(b)	.230	**.592**	.159	.297
Teachers are provided opportunities to learn from one another.(a)	.283	.120	**.740**	.136
Adequate time is provided for professional development.(a)	.270	.117	**.673**	.140
Teachers have time to collaborate with their colleagues.(a)	.223	.135	**.456**	.121
Teachers have a large role in deciding how the school budget will be spent.(b)	.223	.156	.138	**.676**
Teachers have a large role in hiring new teachers.(b)	.155	.124	.093	**.629**
Teachers have a large role in determining the content of in-service professional development programs.(b)	.267	.304	.239	**.494**

Note. a Items measured using 5 item Likert scale (strongly disagree, somewhat disagree, neither disagree nor agree, somewhat agree, strongly agree)

Note. b Items measured using 5 item Likert sacle (no role at all, small role, moderate role, large role, the primary role)

Leadership Effectiveness Variables

Leadership effectiveness was the primary dependent variable for analysis in the study. Leadership effectiveness was measured by the combining two different indicator questions

from the 2008 NCTWCS into the leadership effectiveness index. Leadership effectiveness indices collected from the NCTWCS:

1. Overall, the school leadership in my school is effective.
2. Overall, my school is a good place to teach and learn.

Both items were measured using a five point Likert scale with strongly disagree, somewhat disagree, neither disagree nor agree, somewhat agree, strongly agree. The two leadership effectiveness indicators above had a Cronbach $\alpha = .67$ and an inter-item correlation of .50 from reliability analysis. The Cronbach alpha's for the two constructs were slightly reliable suggesting that the scale scores for respondents like those in the study were similar.

Demographic Variables

The independent demographic variables are described in Table 3. Dummy variables were created for each variable that had more than two categories.

Table 3

2008 NCTWCS Demographic Items used as Variables in Detail

Item / Variables	Details
How many total years have you been employed as an educator?	First Year (Reference Group - Teachers), First Year - 10 Years (Reference Group - Principals), 2 - 3 Years, 4 - 6 years, 7 - 10 Years, 11 - 20 Years, 20+ Years
Please indicate your race/ethnicity.	American Indian or Alaska Native, Asian or Pacific Islander, Black or African American, Black or African American, Hispanic, White (Reference Group), Mixed or Multiple Ethnicity, Some Other Race or Ethnicity.
Please indicate your gender.	Female, Male (Reference Group).
What is the highest degree you have attained?	Bachelor's degree (Reference Group), Master's degree, Doctorate, Other.
Are you certified by National Board for Professional Teaching Standards (NBPTS)?	Yes (Reference Group), No.

Table 3 Continued

Please indicate your position:	Teacher (including intervention specialist, vocational, literacy specialist, special education teacher, etc.), Principal, Assistant Principal, Other Education Professional (school counselor, school psychologist, social worker, library media specialist, etc.)

Analysis

The teachers and principal data from the North Carolina Teacher Working Conditions Survey were loaded into SPSS software. The information was coded and aggregated by school. The teacher's perceptions were compared across the state and within the schools. Variables used in the study from distributive leadership domains with perceived effectiveness were aggregated at the school level.

Confirmatory factor analysis (CFA) was used to confirm the indicator items and factors specific to distributive leadership functions. A frequency analysis were run to determine the spread of distributive leadership in North Carolina. Correlation analysis evaluated the relationship between distributive leadership functions and other variables. Multiple regression analysis evaluated the relationship between principal attributes and distributive leadership functions. Hierarchical linear modeling (HLM) analyzed relationships between measured variables of NCTWCS items as they relate to distributive leadership functions and leadership effectiveness. The model helped to establish that this particular set of independent variables explained a proportion of the variance in the dependent variable (perceived leadership effectiveness) at a significant level. The models used questions comparing and determining strong indicators of behavior that influence teacher perceptions of distributive leadership and effective principal leadership behaviors.

RQ1: The Extent of Distributive Leadership in North Carolina

Frequency distribution with descriptive statistics regarding components of distributive leadership items in the survey was evaluated. The means and standard deviations of survey items associated with distributive leadership are computed. This initial snapshot of distributive leadership across the state shows the extent to which the different components of distributive leadership, as reported by teachers and principals are practiced in schools across North Carolina.

RQ2: Correlation of Distributive Leadership Functions

Correlation coefficients were computed among the four functions of distributive leadership functions to measure the strength of association between the components. This measure varies from 0 (representing random relationships) to 1 (representing perfect linear relationships) or -1 (representing perfect negative linear relationships) and was reported in expressions of r^2 and interpreted as percent of variance explained. Pearson product–moment correlation is the most commonly used technique for evaluating correlations.

RQ3: Principal Characteristics and Distributive Leadership

A regression model examined the second research question which focuses on explaining the relationship between characteristics of principals and their use of distributive leadership. The independent variables were the demographic characteristics of principals and the dependent variable was the distributive leadership components for each school (teacher level data aggregated to create a school mean). Distributive leadership represents the average of all functions of distributive leadership.

The regression model, Table 4, helped to establish the extent to which the sets of independent variables (principal characteristics) explained a portion of the variance in the dependent variable (distributive leadership) at a significant level. Statistical significance was determined by a significance test of R^2 which established the relative predictability of the independent variables through the comparison of the beta weights (Garson, 2010).

Table 4

General Multiple Regression Model for Distributive Leadership and Principal Characteristics

$\hat{Y}$(Distributive Leadership) = $B_0 + B_1$(female) + B_2(Years 11 - 20) + B_3(Years 20 +) + B_4(Black or African American) + B_5(NBPTS) + e

Dependent Variable:
$\hat{Y}$ = Distributive leadership index or functions aggregated by school
Independent Variables:
Principal Gender (Male as reference group);
Principal Years of Experience (First Year to 10 Years as reference group, 3 dummy variables);
Principal Race (White as reference group, 2 dummy variables);
National Board for Professional Teaching Standard (No BBPTS as reference group)
Error Term:
e = error term reflected in residuals
Intercept term:
B = regression coefficients

The B's are the regression coefficients, representing the amount the dependent variable $\hat{Y}$ changes when the corresponding independent changes by one unit. The ratio of the beta coefficients represented the relative predictability of the independent variables on the dependent variable. The R^2 calculated for multiple regression equations and multiple correlations is the percent of variance in the dependent variable that is explained by all of the independent variables.

The last step for the multiple linear regression analysis is the test of significance of the model proposed. Multiple linear regressions use two tests as to whether the final model and the estimated coefficients are found in the general population from the respondent sample. The F-test tested the overall model in contrast to the null hypotheses that the independent variables have no influence on the dependent variable or whether the $R^2 = 0$.

Also, multiple *t*-tests analyzed the significance of individual coefficients and the regression equation intercept against the null hypothesis that the coefficient and intercept is zero.

RQ4: Distributive Leadership and Leadership Effectiveness

Hierarchical Linear Modeling (HLM) was conducted to determine the relationship between distributive leadership and leadership effectiveness. Multilevel modeling tests simultaneously variables at different levels including variables representing values between and within schools (Garson, 2009b).

HLM analyzed multi-level effects on outcomes in the current analyses where both teacher- and school-level sources of variability in outcomes were simultaneously accounted for by specifying a two-level hierarchical model to obtain the best estimates of measured effects. Teacher demographic variables (e.g. ethnicity, gender, etc.) were modeled at the individual level and fixed at the school level. School-level variables (e.g. principal characteristics, distributive leadership functions aggregated, etc.) were entered and attributed to the school outcomes. This technique examined the direct effects of distributive leadership variability as well as teacher and principal characteristics while simultaneously modeling both at the individual (level 1) and schools (level 2) on the outcome variable leadership effectiveness.

The large sample size will decrease standard errors and produce more precise estimates of regression coefficients. Multicollinearity occurs when two or more predictor variables in a multiple regression model are highly correlated and can have an effect on standard errors. Multicollinearity was examined regardless of the analytical decisions from correlation analysis and used to identify pairs of predictive variables that were highly

correlated. The variance-inflation factors (VIF) with tolerances were calculated and the remaining variables are within acceptable tolerances. The issue of collinearity is particularly vital in research on school effects since many variables tend to correlate greatly at both teacher and school levels (O'Connel & McCoach, 2008).

HLM analysis was a two-step approach to modeling the multilevel relationships. Level 1 involved the estimates of separate regressions for each group including the individual-level predictor and outcomes. The Level 2 model analyzed the variance in the Level 1 intercepts and slopes using the group-level variables. The general HLM model is expressed and described in Table 5 (level 1) and Table 6 (level 2) (Castro, 2002; Bryk & Raudenbush, 1992 & Hofmann, 1997).

Validity and Reliability: HLM Current Model Investigation

Hierarchical linear modeling (HLM) allowed for statistical analyses of individual teacher level data with the school (principal) data that were nested (aggregated). The assumption of independence of individual teacher cases is not necessary in HLM analysis because the probability of dependence of teachers in the same school is explored within the nested data set (Aitkin & Longford, 1986; Raudenbush & Bryk, 2002). Aggregation bias is limited since HLM analysis allows investigation of effects of similar characteristics at more than one level. HLM analyses are conducted simultaneously at multiple levels of data allowing separation of variance into within- and between-school elements. Modeling effects of HLM analysis produce effect size estimates that are generally bigger (some cases smaller) with more precision than the estimates from individual-level or school-level analyses alone (Raudenbush & Bryk, 2002).

HLM analysis produced a chi-square statistic to test the significance of the between-group variance. A significant chi-square for the dependent variable showing that between-group variance is significantly different from zero, indicating that the intercept term varies across groups. In addition, an intraclass correlation coefficient (ICC) was computed that represented the percent of the total variance in the dependent variable that is between groups (Bryk & Raudenbush, 1992). The ICC indicated the amount of variance that could potentially be explained by a Level-2 predictor in consideration of relationships among variables at different levels of analysis and multilevel models (Klein & Kozlowski, 2000). The HLM hypothesized that group-level principal characteristics and aggregated distributive leadership functions moderated the relationship between individual-level (teacher) characteristics and distributive leadership functions. The determination as to whether HLM analysis is warranted or that those variables would be treated as either individual or group level variables were based on the ICC (Castro, 2002).

A significant F-test was used to indicate when the group-level properties needed to be investigated allowing the use of both individual-level and group-level data analyses for HLM. A *t*-test was used to test the significance of whether the pooled Level-1 slopes between the independent variable and the dependent variable differ from zero. The *t*-test assesses whether, on average, the relationship between the independent variables and the dependent variables is significant supporting our research question hypothesis (Wech & Heck, 2004).

HLM procedure specifies that there must be significant variance across groups in the Level-1 intercepts (β_{0j}). The intercept terms represent the between-group variance in the dependent variable after controlling for the independent variable. Chi-square tests for the

estimates of the intercept (u_{0j}) and slopes (u_{1j}) are performed to confirm that the variance in the intercepts and slopes for the dependent variable across groups is significant. If there is not significant between group variance, then a group effect would not exist (Wech & Heck, 2004). Calculating R^2 determined if there was the proposed relationship between distributive leadership, teacher characteristics and leadership effectiveness. This R^2 is the percentage of the individual variance in leadership effectiveness is explained by individual level-1 variables.

Results of *t*-test show whether the group level variable has a significant effect on the dependent variable. Using information from the HLM intercepts and slopes as outcomes analyses (Luke, 2004); an overall R^2 for the respective Level-2 equations can be computed. Given the R^2, it was determined the independent variables' variance between groups, and subsequently how much of the total variance was attributed to distributive leadership.

Table 5

General Hierarchical Linear Model (HLM) causal model (Level-1) with equations and symbols described

Y_{ij} (LE) = β_{0j} + β_{1j} (DLSD) + β_{2j} (DLDP) + β_{3j} (DLRO) + β_{4j} (DLMIP) + β_{5j} (Year Ed 2 - 3) + β_{6j} (Year Ed 4 - 6) + β_{7j} (Year Ed 7 - 10) + β_{8j} (Year Ed 11 - 20) + β_{9j} (Year Ed 20 +) + β_{10j} (Am. Indian or Alaska Native) + β_{11j} (Asian or Pacific Islander) + β_{12j} (Black or African American) + β_{13j} (Hispanic) + β_{14j} (Mixed or Multiple) + β_{15j} (Other Race) + β_{16j} (Masers) + β_{17j} (Doctorate) + β_{18j} (Other Degree) + β_{19j} (Female) + β_{20j} (NBPTS) + e_{ij}

Dependent Variable:
LE= Leadership Effectiveness (Y_{ij})
Independent Variables:
DLSD = Distributive Leadership Function – Setting Direction;
DLDP = Distributive Leadership Function – Developing People;
DLRO = Distributive Leadership Function – Redesigning the Organization;
DLMIP = Distributive Leadership Function – Managing the Instructional Program;
Teacher Years of Experience (First Year as reference group with 5 dummy variables);
Teacher Race (White as reference group with 6 dummy variables);
Teacher Gender (Male as reference group);
Teacher Highest Degree (Bachelor as reference group with 3 dummy variables);
National Board for Professional Teaching Standard certified (No NBPTS as reference group)
Error Term:
e_{ij} = residual variance; otherwise known as random errors term
Intercept term:
β_{0j} = Level-1 intercept, leadership effectiveness for principal j adjusted for teacher characteristics and distributive leadership functions

Table 6

General Hierarchical Linear Model (HLM) causal model (Level-2) with equations and symbols described

Level-2: $\beta_{0j} = \Upsilon_{00} + \Upsilon_{01}$(Year Ed 11 - 20) + Υ_{02}(Year Ed 20 +) + Υ_{03}(Black or African American) + Υ_{04}(Female) + Υ_{05}(NBPTS) + u_{0j}

Level-2a: $\beta_{gj} = \Upsilon_{g0} + u_{1j}$

β_{0j} = Level-1 intercept, leadership effectiveness for principal j adjusted for teacher characteristics and distributive leadership functions

Υ_{00} = Level-2 intercept, grand mean of leadership effectiveness across all schools (principals) adjusted for teacher characteristics and distributive leadership functions

Level-2 Independent Variables / Predictors:

Principal Years of Experience (First Year to 10 Years as reference group with 3 dummy variables);

Principal Race (White as reference group with 2 dummy variables);

Principal Gender (Male as reference group);

National Board for Professional Teaching Standard certified (No NBPTS as reference group)

u_{0j} = level-2 error term (random effect), unique effect of principal j on the mean leadership effectiveness adjusted for principal characteristics

β_{gj} = level-1 slope, effect of teacher characteristics and distributive leadership functions on leadership effectiveness adjusted for principal characteristics

Υ_{g0} = average regression slope across all principals adjusted for principal characteristics.

u_{1j} = error component for the slope

Generalizability

Reliability in a quantitative study entails the degree to which the study can be replicated and the consistency of scale measurement within the survey. Although various texts describe multiple categories of validity, two types were recognized for this study. External validity is the extent to which findings can be applied to another group and refers to the generalizability of the study. Generalizability across the teachers studied to other teachers in similar settings was not directly observed. However, due to the fact that the data was gathered across the state followed by careful analysis of findings enabled the final analysis to be generalized to all schools in the state and outside of the state in similar contexts.

Limitations of the Study

The study may be limited by lack of responses to surveys by teachers within schools. As data was collected, schools were included with a minimum 40% response rate on the Teacher Working Condition Survey. Another potential threat to validity in this study was teacher attitude toward the principal; teacher's attitudes may influence their rating of

principal's leadership effectiveness. The direction and extent of potential bias of these factors was unknown.

Bias may also have been introduced through the reduction of the survey data set in removing missing teachers and schools that did not have responses by the principal for the school. The type of teachers and/or principals that may not have responded could have altered results, interpretation and ultimately created researcher bias.

The use of school-level data not identifying individual teacher responses was a condition of acquiring the data, and intended to ensure the anonymity of respondents. Limited identification ultimately may limit forms of analysis and, on some levels, affect our associations in the study. The exclusion of some variables may have lead to a mis-specified model. Yet, maintaining a degree of anonymity for the respondents promotes a higher than normal response rate that can minimize threats to internal validity due to respondent mistrust regarding assurances of confidentiality (Hirsch & Church, 2009).

CHAPTER 4

Results and Data Analysis

Introduction

This study was designed to examine the relationship between distributed leadership and principal leadership effectiveness. The initial analysis involved conducting confirmatory factor analysis of leadership related items from North Carolina Teacher Working Conditions Survey (NCTWS). Research question one is addressed by observing the frequency of distributive leadership components across North Carolina. Next, addressed the second research question, which involved investigating the extent to which leadership functions were correlated to one another. Multiple regressions were conducted to determine what characteristics predict the use of distributive leadership, which addresses the third research question. The final phase primarily addressed the fourth research question which involved generating the two level hierarchical linear models that predict the leadership effectiveness of principals. This chapter presents the results of the statistical analyses of data gathered from 70,811 teachers and principal across North Carolina.

Descriptive Statistics: Teachers and Principals

As shown in Table 7, almost 50% of the 68,982 teachers represented in the data set have eleven or more years of educational experience and first year teachers comprise the smallest percentage (7%) of the teachers represented. The largest ethnic group represented is White, comprising 83% of the 68,982 teachers followed by Black or African American with 12%. The sample of teachers is predominately female at 82%. And, most teachers' highest

degree is bachelor's, representing 64%, followed by master's degree representing 33%. Only 12% of the 68,982 teachers have their NBTS certification.

As indicated in Table 7, 94% of the 1,829 principals have eleven or more years of educational experience. The largest ethnic group represented is White comprising 76 % of the sample followed by Black or African American, making up 21 % of the 1,829 principal respondents. The sample of principals is more 'evenly' distributed between male and female principals. Female principals represent 57% and males represent 43% of the sample. Most principals, 78%, have a master's degree, which is required in most cases in order to have a principal licensure in North Carolina, and 10% of the principals have a doctorate degree as their highest degree earned. Only 5% of the 1,829 principals have their NBTS certification.

Table 7

Teachers and Principals Descriptive Statistics

	Teachers		**Principals**	
	n	***P***	***n***	***P***
How many total years have you been employed as an educator?				
First Year	4,662	6.8	6	.3
2 - 3 Years	8,364	12.1	5	.3
4 - 6 Years	10,375	15.1	10	.5
7 - 10 Years	11,375	16.5	90	4.9
11 - 20 Years	17,776	25.8	694	38.0
20+ Years	16,351	23.7	1,023	56.0
Total	68,903	100.0	1,828	100.0
Please indicate your race/ethnicity.				
American Indian or Alaska Native	676	1.0	27	1.5
Asian or Pacific Islander	382	.6	2	.1
Black or African American	7,845	11.5	387	21.2
Hispanic	839	1.2	8	.4
White	56,818	83.3	1,384	76.0
Mixed or Multiple Ethnicity	989	1.5	7	.4
Some other race or ethnicity	653	1.0	7	.4
Total	68,202	100.0	1,822	100.0
Please indicate your gender.				
Female	55,726	81.9	1,036	57.0
Male	12,346	18.1	781	43.0
Total	68,072	100.0	1,817	100.0

Table 7 Continued

What is the highest degree you have attained?				
Bachelor's	43,951	64.2	3	.2
Master's	22,490	32.9	1,418	77.8
Doctorate	344	.5	177	9.7
Other	1,660	2.4	224	12.3
Total	68,445	100.0	1,822	100.0
Are you certified by National Board for Professional Teaching Standards (NBPTS)?				
Yes	8,028	11.7	93	5.1
No	60,689	88.3	1,735	94.9
Total	68,717	100.0	1,828	100.0

The Extent of Distributive Leadership in North Carolina

Table 8 displays the frequency distribution with descriptive statistics regarding components of distributive leadership items in the survey was evaluated. The means and standard deviations of survey items associated with distributive leadership are computed. This initial snapshot of distributive leadership across the state shows the extent to which the different components of distributive leadership, as reported by teachers and principals are practiced in schools across North Carolina.

Teachers and principals reported that the distributive leadership function, setting direction, had the highest average mean of 3.7 across all items compared to the other distributive leadership functions. Managing the instructional program and redesigning organization were equal with an average mean response of 3.6. Developing people had the weakest response rate average mean of 2.2 across all items. The item with the highest mean response of 4.0 was for the item: *Opportunities are available for members of the community to actively contribute to this school's success*. The item with the lowest mean response of 1.9 was for the item: *Teachers have a large role in hiring new teachers*.

It is interesting to note that, on average, over 67% of the respondents either somewhat agreed or strongly agreed with items related to distributive leadership and setting direction. On average, over 65% of respondents somewhat agreed or strongly agreed with items related to redesigning organization. On average, over 57% had either a large role or it was their primary role in managing the instructional program related to distributive leadership. Lastly, over 63% of the respondents had a small role or no role at all regarding components of developing people within distributive leadership components.

Table 8

Survey Results for the Distributive Leadership Functions With Items

Answer Options	**Strongly Disagree**	**Disagree**	**Neither Disagree nor Agree**	**Agree**	**Strongly Agree**	***M***	***SD***
Distributive Leadership: Setting Direction							
The school leadership consistently supports teachers.	6.3	12.3	11.2	36.3	33.9	3.8	1.2
There is an atmosphere of trust and mutual respect within the school.	8.7	15.3	8.9	39.8	27.3	3.6	1.3
The faculty and staff have a shared vision.	4.5	9.9	14.6	40.8	30.2	3.8	1.1
The school leadership makes a sustained effort to address teacher concerns about empowering teachers.	7.0	12.2	16.1	38.6	26.1	3.7	1.2
The faculty has an effective process for making group decisions and solving problems.	8.0	16.5	13.8	39.4	22.3	3.5	1.2
Teachers are centrally involved in decision making about educational issues.	9.2	18.6	12.1	41.7	18.4	3.4	1.2
Opportunities are available for members of the community to actively contribute to this school's success.	2.0	5.5	15.9	40.7	36.0	4.0	1.0
Mean for Setting Direction	**6.5**	**12.9**	**13.2**	**39.6**	**27.7**	**3.7**	**1.2**
Distributive Leadership: Redesigning Organization							
Teachers are provided opportunities to learn from one another.	4.4	14.3	10.8	44.7	25.8	3.7	1.1
Adequate time is provided for professional development.	5.9	15.8	14.1	40.8	23.5	3.6	1.2
Teachers have time to collaborate with their colleagues.	11.2	22.3	5.7	39.6	21.2	3.4	1.3
Mean for Redesigning Organization	**7.2**	**17.5**	**10.2**	**41.7**	**23.5**	**3.6**	**1.2**

Table 8 Continued

Answer Options	No Role at All	Small Role	Moderate Roll	Large Role	The Primary Role		
Distributive Leadership: Managing Instructional Program							
Teachers have a large role in devising teaching techniques.	2.4	9.3	22.7	41.3	24.4	3.8	1.0
Teachers have a large role in setting grading and student assessment practices.	5.5	14.0	24.7	36.6	19.1	3.5	1.1
Teachers have a large role in selecting instructional materials and resources.	3.4	15.2	29.2	37.1	15.1	3.5	1.0
Mean for Managing Instructional Program	**3.8**	**12.8**	**25.5**	**38.3**	**19.5**	**3.6**	**1.1**
Distributive Leadership: Developing People							
Teachers have a large role in deciding how the school budget will be spent.	38.2	31.6	20.2	8.8	1.2	2.0	1.0
Teachers have a large role in hiring new teachers.	48.5	26.9	16.7	7.2	0.8	1.9	1.0
Teachers have a large role in determining the content of in-service professional development programs.	18.0	28.1	31.2	19.3	3.3	2.6	1.1
Mean for Developing People	**34.9**	**28.9**	**22.7**	**11.8**	**1.8**	**2.2**	**1.0**

Descriptive Statistics: Distributive Leadership Functions and Leadership Effectiveness

Table 9 display the statistical components of the distributive leadership functions associated from the sample respondents. The mean ranges from 2.2 for Developing People to 3.7 for Setting Direction and the standard deviation ranges from .8 for Developing People to 1.0 for Redesigning the Organization. The skewness of the distribution for each distributive leadership function ranges from -.67 to .60 and is within acceptable skewness limits between -.80 and +.80 for normality measures and analyses.

The distributive leadership function setting direction shows that the responses had a mean of 3.7 (within the likert scale 1 - 5) and standard deviation of 1.0 representing the spread of responses. The distributive leadership function managing the instructional program shows that the respondents in this category had a mean of 3.6 and standard deviation of .9. The distributive leadership function redesigning the organization showed that the respondents

had a mean of 3.6 and standard deviation of 1.0. The distributive leadership function developing people shows the respondent's data had a mean of 2.2 and standard deviation of .8.

In representing a combination of all distributive leadership functions, the distributive leadership index (Table 9), had a mean of 3.6 and standard deviation of .7. The skewness for distributive leadership index is -.38 within the range of -.80 to +.80 that is an acceptable range of normality measures and analyses.

Leadership effectiveness is the primary dependent variable for analysis in the study. Leadership effectiveness is measured by the combining two different indicator questions from the 2008 NCTWCS into the leadership effectiveness index. The leadership effectiveness index is a combination of two leadership effectiveness measures with a mean of 3.7 (out of the 5 point likert scale) and standard deviation of 1.1 in representing the spread of those responses. The skewness measure is -.76 and was within the acceptable range between -.80 and +.80 for normality measures and analyses.

Table 9
Distributive Leadership Functions and Leadership Effectiveness Descriptive Statistics

	N	*M*	*SD*	Skewness
Distributive Leadership Functions				
Setting Direction	68,964	3.7	1.0	-.67
Managing Instructional Programt	68,890	3.6	.9	-.46
Redesigning Organization	68,967	3.6	1.0	-.53
Developing People	68,869	2.2	.8	.60
Distributive Leadership Index	68,969	3.6	.7	-.38
Leadership Effectiveness Index	68,951	3.7	1.1	-.76

Bivariate Analyses: Teacher Level Variables

To answer the second research question for discovering the relationship between different components of distributive leadership, Pearsons correlations were computed among the four distributive leadership functions as shown in Table 10. The results of the correlation analyses indicate whether the particular correlations are significant. In this case, all correlations are significant at the $p < .01$ level and range from .35 to .57 and are moderately correlated. Distributive leadership function setting direction has the strongest correlation to the other variables. Setting direction and redesigning the organization have the strongest correlation. The moderate correlations between distributive leadership functions provide evidence to linkages in measuring specific components and overall distributive leadership measures.

Table 10
Distributive Leadership Functions - Correlations

	Setting Direction	Managing Instructional Program	Redesigning the Organization	Developing People
Setting Direction	–			
Managing Instructional Program	.49**	–		
Redesigning the Organization	.57**	.35**	–	
Developing People	.53**	.46**	.39**	–

**p < 0.01.

Table 11 describes bivariate results for discrete demographic teacher level variable relationships. The demographic variables (total years employed as educator, race/ethnicity, gender, highest degree and NBPTS) were each evaluated for there between effects and differences in proportions between groups. All chi-square tests for these variables were significant indicating that the sample proportions by their groups were not similar to each other and means that there are significant differences in variations between items.

Table 11 also summarized bivariate results for discrete demographic teacher level variable relationships and distributive leadership functions. All demographic variables (total years employed as educator, race/ethnicity, gender, highest degree and NBPTS) along with the four distributive leadership functions were each evaluated for there between effects and homogeneity of variance. The F-test for the ANOVA analyses between the demographic variables was significant, except for distributive leadership function redesigning organization by gender and distributive leadership function setting direction by NBPTS. The significant F-test indicates measurable differences between the different groups of teachers for those variables in that the variances are significantly different, not homogeneous. The relationships relationship between distributive leadership function redesigning organization by gender and distributive leadership function setting direction by NBPTS is not significant indicating that the groups are not significantly different from each other.

Table 11

Bivariate Analyses - Independent Demographic Variables and Distributive Leadership Functions (Teacher Level)

	Total Years Employed as Educator	Race / Ethnicity	Gender	Highest Degree Attained	NBPTS Certification
Total Years Employed as Educator	–				
Race/Ethnicity	X^2 = 317.90**	–			
Gender	X^2 = 160.80**	X^2 = 78.54**	–		
Highest Degree Attained	X^2 = 3,078.00**	X^2 = 170.60**	X^2 = 398.10**	–	
NBPTS Certification	X^2 = 2,365.00**	X^2 = 227.40**	X^2 = 152.20**	X^2 = 1,674.00**	–
Distributive leadership Function: Setting Direction	F = 51.12**	F = 62.67**	F = 64.27**	F = 24.19**	F = 0.05
Distributive Leadership Function: Managing Instructional Program	F = 13.64**	F = 26.00**	F = 72.43**	F = 5.04**	F = 149.26**

Table 11 Continued

Distributive Leadership Function: Redesigning Organization	*F* = 49.06**	*F* = 77.08**	*F* = 2.21	*F* = 38.28**	*F* = 12.34**
Distributive Leadership Function: Developing People	*F* = 115.37**	*F* = 16.19**	*F* = 6.05*	*F* = 8.65**	*F* = 112.39**

*p < 0.05. **p < 0.01.

Bivariate Analyses: Principal Level Variables

Table 12 shows summarized bivariate analyses of the discrete demographic principal level variable relationships. All demographic variables (total years employed as educator, race/ethnicity, gender, and NBPTS) were each evaluated for there between effects and differences in proportions between groups. All chi-square tests for these variables were significant except for total years employed as educator by race, and NBPTS by race. Significant chi-square test indicates that the sample proportions by their groups were not similar to each other and means that there are significant differences in variations between items. The non-significant test indicates that there may be minimal differences across different groups of principals specifically between race/ethnicity by total years employed as educator as well as race/ethnicity by NBPTS.

Table 12
Bivariate Analyses - Independent Variables (Principal Level)

	Total Years Employed as Educator	Race / Ethnicity	Gender	NBPTS Certification
Total Years Employed as Educator	–			
Race/Ethnicity	X^2 = 22.88	–		
Gender	X^2 = 25.06**	X^2 = 15.47*	–	
NBPTS Certification	X^2 = 24.95**	X^2 = 1.93	X^2 = 13.28**	–

*p < 0.05. **p < 0.01.

Multiple Regressions: Distributive Leadership and Principal Characteristics

Regression models were used to examine the third research question, measuring the relationship between characteristics of principals and the use of distributive leadership in schools. The independent variables were demographic characteristics of principals and the dependent variable was an aggregated (at school level) measured variable of distributive leadership in schools. The variables were aggregated in that they were a combination of related categories within a common branch of a hierarchy (i.e. schools) to provide information at a broader level across North Carolina to that which the individual school detailed observations were observed.

The means for the four distributive leadership functions and the distributive leadership index are noted in Table 9 and they all have a range of 1 - 5. Due to the fact that there were multicollinearity issues with level education of the principal and years of education, level of education is not included in the regression models. In North Carolina an advanced degree, master's, is required to be a practicing administrator causing advanced levels of degree to be problematic as a variable in the regression equations. Furthermore, the race/ethnicity variables, except for Black or African American and White, were removed due to limited sizes of sub-populations that were too small to be used as predictors (see Table 7).

The results of the multiple regression analysis as related to distributive leadership index and principal characteristics are shown in Table 13. The multiple regression model with principal characteristics as predictors was significantly related to the distributive leadership index, $R^2 = .03$, adjusted $R^2 = .02$, F (5, 1806) = 9.35, $p < .01$. Although significant, the low R^2 value indicates that this model only explains 3% of the variance of

distributive leadership. These results suggest that to be a robust model that accurately predicts distributive leadership, more variables are necessary. Principals who identified as Black or African American were viewed by teachers as less likely (negative value) to use distributive leadership than their White colleagues. All other variables were not significant.

The results of the multiple regression analysis as related to distributive leadership function setting direction and principal characteristics are shown in Table 13. The multiple regression model with principal characteristics as predictors was significantly related to the distributive leadership function setting direction, $R^2 = .03$, adjusted $R^2 = .02$, F (5, 1806) = 9.57, $p < .01$. Although significant, the low R^2 value indicates that this model only explains 3% of the variance of distributive leadership suggesting that to be a robust model that accurately predicts distributive leadership setting direction, more variables are necessary. Black or African American principals were viewed by teachers as less likely (negative value) to use the distributive leadership function setting direction than their White colleagues. All other variables were not significant for the setting direction regression model.

The results of the multiple regression analysis as related to distributive leadership function managing the instructional program and principal characteristics are shown in Table 13. The multiple regression equation with principal characteristics as predictors is significantly related to the distributive leadership function managing the instructional program, $R^2 = .04$, adjusted $R^2 = .04$, F (5, 1806) = 15.42, $p < .01$. Although significant, the low R^2 value indicates that this model only explains 4 % of the variance of distributive leadership function managing instructional program. These results suggest that to be a robust model that accurately predicts distributive leadership function managing instructional

program, more variables are necessary. Principals who are Black or African American were viewed by teachers as less likely (negative value) to use the distributive leadership function managing instructional program than their White colleagues. Female principals were less likely to use distributive leadership function managing the instructional program than male counterparts. All other variables were not significant for managing instructional program.

The results of the multiple regression analysis as related to distributive leadership function redesigning the organization and principal characteristics are shown in Table 13. The multiple regression equation with principal characteristics as predictors is not significantly related to the distributive leadership function redesigning the organization, R^2 = .01, adjusted R^2 = .00, F (5, 1806) = 2.01, $p > .05$.

The results of the multiple regression analysis as related to distributive leadership function developing people and principal characteristics are shown in Table 13. The multiple regression equation with principal characteristics as predictors is significantly related to the distributive leadership function developing people, R^2 = .03, adjusted R^2 = .03, F (5, 1806) = 10.45, $p < .01$. Although significant, the low R^2 value indicates that this model only explains 3% of the variance of distributive leadership function developing people suggesting that to be a robust model that accurately predicts distributive leadership function developing people, more variables are necessary. Principals who identified as Black or African American as well were viewed by teachers as less likely (negative value) to use the distributive leadership function developing people than their White colleagues. Female principals were viewed by teachers as more likely to use the distributive leadership function developing people than male colleagues. All other variables were not significant in the developing people model.

Table 13

Summary of Regression Analysis for Demographic Variables Predicting Distributive Leadership (DLI), Setting Direction (SD), Managing Instructional Program (MIP), Redesigning the Organization (RO),and Developing People (DP)

	DL: Index		DLF: SD		DLF: MIP		DLF: RO		DLF: DP	
	B	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*	*B*	*SE*
(Constant)	3.45**	.04	3.82**	.05	3.66**	.04	3.39**	.04	2.24**	.04
Female	.00	.02	.01	.02	-.11**	.02	.05*	.02	.04*	.02
Total Years Employed as Educator: 11 - 20	-.03	.04	-.05	.05	.00	.04	-.01	.04	-.02	.04
Total Years Employed as Educator: 20 +	-.02	.04	-.04	.05	.02	.04	-.01	.04	-.03	.04
Black or African American	-.15**	.02	-.19**	.03	-.12**	.02	-.06*	.03	-.16**	.02
NBPTS Certification	.00	.04	-.02	.05	.02	.04	-.02	.05	.05	.04
R^2	.03		.03		.04		.01		.03	
Adjusted R^2	.02		.02		.04		.00		.03	
F (5,1806)	9.35**		9.57**		15.42**		2.01		10.45**	

*p < 0.05. **p < 0.01.

In brief, of the principal characteristics, race is the primary predictor of a principals' use of different components of distributive leadership functions. Female principals had predictable effects for use of distributive leadership functions for managing the instructional program and developing people. Lastly, it is noted that years of experience for principals had no significant predictive effects for distributive leadership applications.

Hierarchical Linear Model Building

There are three specific steps in developing a two-level hierarchical linear model. Step one involves specifying the null model or what is commonly called the 'no predictors model.' In the first step, the variance of the within- and between-groups components is evaluated. This first step determines the amount of variance in leadership effectiveness that occurs between the schools in the sample. Step two is the specification of the Level 1 components of the multilevel model. For this study, the level 1 components include the

teacher level variables. Lastly, the Level 2 model is specified. Level 2 predictors include principal level variables (Heck, Thomas & Tabata, 2010).

Examination of the Null: Model 1

The null model therefore provides an estimated mean leadership effectiveness score for all schools and provides variance between Level 1 and Level 2 components. Table 14 displays the model dimensions for the null model related to leadership effectiveness. For this analysis, the estimation method is restricted maximum likelihood (REML) whereby variance components were included in estimating the likelihood function (Heck, Thomas & Tabata, 2010). REML estimation has better bias characteristics (Diggle, 1988), handles high correlations more effectively, and is less sensitive to outliers (Garson, 2009b).

Three hierarchical models were used to examine leadership effectiveness. Table 14 presents the results of the regression models that predict leadership effectiveness. Model 1, the fully unconditional model or null model (i.e., no teacher and principal variables), indicates that the grand mean in leadership effectiveness for all schools was 3.75, and that is represented by an intra-class correlation (ICC) of 13% indicating that the variance in leadership effectiveness was associated with differences between schools. The ICC described the proportion of variance common to each school unit. This does not evaluate the variation associated with the individual teachers within the schools. The ICC explained the amount of variance in the leadership effectiveness explained by the schools (Hox, 2002).

This intra-class correlation provides a sense of the degree to which differences in the outcome (leadership effectiveness) exist between Level 2 units (schools). That is, it helps answer the question of the existence of meaningful differences in outcomes between Level 2

units (schools). The results of the null model suggest that the development of a multilevel model was warranted (not .05 or 5% or lower as a ‘cutoff’). A value higher than 5% indicated that the school units were more homogeneous in their groupings and responses and there existed substantial variability between schools (Heck, Thomas & Tabata, 2010).

In the null model, the school variance component was 13% of the total of both variance components. We would say that the school effect accounted for 13% of the variance in leadership effectiveness scores between schools, and 87% of variance involved teachers within schools. We can also say that scores clustered by school, meaning that two teachers randomly selected from the same school were more likely to have similar scores than a pair of randomly selected teachers representing different schools (Garson, 2009b).

Examination of the Teacher-Level: Model 2

In this multilevel analysis beginning with model 2 (level 1), an evaluation was made as to the effects of the independent variables, distributive leadership functions and teacher demographic information and their effects on the dependent variable, leadership effectiveness. At this level, the teachers were clustered within schools. School effects (level 2) were analyzed in the next section where the principal factors were also considered.

Model 2 indicates that once we added the variables of interest, teacher level responses and perceptions of their influence on leadership effectiveness and distributive leadership, without controlling for other difference between and within schools that teachers are in schools with principals who have influence. The estimate of the intercept, adjusted for all parameters is 1.14 (.02). This represents the average school mean adjusted for the teacher

parameters. The addition of the teacher variables explained 84% of the between-school variance and 28% of the within-school variance.

Of the four distributive leadership functions, setting direction was significant ($p < .01$) and had the greatest 'weight' of impact on leadership effectiveness with a slope intercept of $B = .71$ (.01). The distributive leadership function, managing the instructional program, was significantly related ($p < .01$) with a slope intercept of $B = .01$ (.00). The function, redesigning the organization, as a predictor of leadership effectiveness was not significantly related ($p > .05$) as a predictor of leadership effectiveness. The distributive leadership function, developing people, was significantly related ($p < .01$) with a calculated slope intercept of $B = -.04$ (.01). The negative slope intercept indicates that this function had a slightly negative effect on predicting leadership effectiveness measures.

Teacher demographic attributes related to leadership effectiveness lend insight into teachers perception based on their characteristics regarding principals being effective leaders in schools. Teacher attributes and there predictive ability for leadership effectiveness was analyzed individually at level 1 of the hierarchical linear model. Teachers' level of degree, except for Master's, and whether they have NBPTS certification are not significant ($p > .05$) and do not affect perceptions of leadership effectiveness. In comparison to a teacher with a bachelor's degree, Master degree teachers were significantly related ($p < .05$) with a slope intercept of $B = .02$ (.01) to having effects on leadership effectiveness ratings.

Teacher's years in education compared to first year teachers were significantly related to leadership effectiveness ratings specifically for those teachers with two to three years of experience and four to six years of experience. Teachers with 2 - 3 years had a slope intercept

of B = .03 (.02) and teachers with 4 - 6 years experience with a slope intercept of B = .04 (.01).

All categories of teachers ethnicity as compared to White teachers were statistically significant ($p < .01$) in their effects of leadership effectiveness perception measures albeit each had a negative slope intercept impact ranging from B = -.10 to -.26. Specifically, Asian / Pacific Islander had the greatest weight of impact with a slope intercept of B = -.26 (.05). With all minorities the perceived leadership effectiveness had a downward (negative) impact on leadership effectiveness measures. It may be concluded that minority teachers generally view their principal as less effective compared to White teachers.

Female teachers, compared to male teachers were statistically significant ($p < .05$) in their perception of effects on leadership effectiveness measures. Specifically, female teachers tend to perceive leadership effectiveness more positively than male teachers having a slope intercept of B = 0.02 (0.01) compared to males.

The addition of the within-group predictors, reduces the residual (within-group) variability (i.e., from 1.12 in the null model to .80 in model 2). This reduction in variance between the one-way ANOVA (or null) model and the current model can be used to calculate a reduction in variance estimate (or R^2) for the within-school and between-school portions of the model. For the within-groups portion, this is calculated as .28. This suggests that the teacher parameters accounted for 28% of the within-school variability in leadership effectiveness measures. The within-school predictor also affects the residual variability in intercepts at the school level. In particular, the initial variance component for schools, from the null model, was 0.17. After the teacher parameters were added, the between-school

variance in leadership effectiveness shrinks to .03. The reduction in variance between schools was .84. This suggests that within-group teacher parameters accounted for 84% of the between-groups variability in leadership effectiveness in that the variation in means across schools was attributed to differences in the teacher parameters in those schools. Another way of looking at this is that the initial variability in leadership effectiveness observed between schools (i.e., the ICC) was reduced considerable after controlling for teacher parameters. The ICC was calculated as 3%, which is a reduction from null model of 13% and indicated that 97% of variance involved teachers within schools in model 2. Even after controlling for teacher parameters within schools, a statistically significant amount of variation in outcomes still remains both within and between schools (Heck, Thomas & Tabata, 2010). The rejection of the null hypothesis that there was no significant variation in school means after adjustment for teacher parameters is still acceptable (Norušis, 2005).

Examination of the Principal-Level: Model 3

In Model 3 principal-level demographic variables were added to analyze and to explain the variability in intercepts across schools. In this case, the thesis was that principal demographics would impact the remaining variability in leadership effectiveness measures between schools. Table 14 suggests that the variance was negligibly affected by adding the principal characteristics. The estimate of the intercept was unchanged at 1.14 (.02) after the principal level variables were added to the model. As shown in Model 3, none of the principal demographic variables were significantly related to leadership effectiveness measures. Distributive leadership functions and teacher demographic components that were significant in Model 2 remained significant in model 3 with little, if any, change in estimates.

Furthermore, variance in leadership effectiveness between and within-schools was also unchanged with the addition of the principal demographic variables. The intra-class correlation coefficient was unchanged at 3%.

Overall, as it relates to the focus of this study, three of the four distributive leadership functions predict the likelihood that a principal will be perceived as an effective leader. Some teacher characteristics were related to their perceptions regarding their principals being rated as effective, specifically as it relates to gender, race and some years of experience.

Table 14

Distributive Leadership, Teacher and Principal Demographic Variables Predicting Leadership Effectiveness

	Model 1: Null Model	Model 2: Teacher Variables	Model 3: Teacher + Principal Variables
	Estimate	Estimate	Estimate
Intercept: Leadership Effectiveness	3.75 (.01)**	1.14 (.02)**	1.14 (.02)**
Teacher Variables			
Distributive Leadership: Setting Direction		.71 (.01)**	.71 (.01)**
Distributive Leadership: Managing Instructional Program		.01 (.00)**	.01 (.00)**
Distributive Leadership: Redesigning Organization		.00 (.00)	.00 (.00)
Distributive Leadership: Developing People		-.04 (.01)**	-.04 (.01)**
Female		.02 (.01)**	.02 (.01)*
Total Years Employed as Educator: 2 - 3		.03 (.02)*	.04 (.02)*
Total Years Employed as Educator: 4 - 6		.04 (.01)**	.04 (.02)**
Total Years Employed as Educator: 7 - 10		.01 (.01)	.02 (.02)
Total Years Employed as Educator: 11 - 20		.01 (.01)	.01 (.02)
Total Years Employed as Educator: 20 +		-.01 (.01)	-.01 (.02)
American Indian or Alaska Native		-.17 (.04)**	-.18 (.04)**
Asian or Pacific Islander		-.26 (.05)**	-.26 (.05)**
Black or African American		-.14 (.01)**	-.14 (.01)**
Hispanic		-.16 (.03)**	-.16 (.03)**
Mixed or Multiple		-.10 (.03)**	-.10 (.03)**
Other Race		-.10 (.04)**	-.10 (.04)**
Master's Degree		.02 (.01)*	.02 (.01)*
Doctorate Degree		-.05 (.05)	-.05 (.05)
Other Degree		.01 (.02)	.01 (.02)
NBPTS Certification		.02 (.01)	.02 (.01)
Principal Variables			
Female			-.00 (.04)
Total Years Employed as Educator: 11 - 20			.03 (.04)
Total Years Employed as Educator: 20 +			.01 (.04)
Black or African American			-.08 (.05)
NBPTS Certification			-.03 (.10)

Table 14 Continued

Random Effects Intercept (Variance Between Schools)	.17	.03	.03
Random Effects Level 1 (Variance Within Schools)	1.12	.80	.80
Interclass Correlation (Proportion of Variance between Schools	.13	.03	.03
Variance in Leadership Effectiveness Between Schools Explained (%)	N/A	0.84	0.84
Variance in Leadership Effectiveness Within Schools Explained (%)	N/A	0.28	0.28

*p < 0.05. **p < 0.01.

Summary of Results

Analyses of quantitative data collected from the 2008 North Carolina Teacher Working Conditions Survey attempted to answer the following three research questions:

1. What components of distributive leadership exist in North Carolina schools?
2. What is the relationship between different components of distributive leadership?
3. What characteristics of principals are associated with the use of distributive leadership in schools?
4. What is the relationship between the teachers' perception of the principal's use of distributed leadership and the principal's leadership effectiveness?

Research question one was the initial snapshot of distributive leadership across North Carolina showing the various ways that distributive leadership components are perceived in schools. The distributive leadership function setting direction had the highest mean, M = 3.7, of the distributive leadership functions. Managing the instructional program and redesigning organization were equal with a mean response of 3.6. Furthermore, it is interesting to note that, on average, over 67% of the respondents either somewhat agreed or strongly agreed with items related to distributive leadership and setting direction and on average, over 57% had either a large role or it was their primary role in managing the instructional program

related to distributive leadership. On average, over 65% of respondents somewhat agreed or strongly agreed with items related to redesigning organization. Lastly, over 63% of the respondents had a small role or no role at all regarding components of developing people within distributive leadership components.

Research question two evaluated the relationship between different components of distributive leadership and the results suggest that teachers who believed that one of the leadership components existed in their school tended to agree that the other leadership components existed in their school as well. The results of the correlation analysis indicated that the particular correlations between the distributive leadership functions were significant and moderately correlated. The moderate correlations between distributive leadership functions provide evidence to linkages in measuring specific components and overall distributive leadership measures. Furthermore, the correlational analyses between the demographic variables and distributive leadership functions indicate that there were mostly measurable significant differences between the different groups of teachers and principals.

Research question three addresses the characteristics of principals that are associated with the use of distributive leadership in schools. The results from Table 13 show that female principals are less likely compared to male principals, to administer the management of the instructional program for distributive leadership in schools. Furthermore, when it comes to developing people in the distributive leadership model, female principals are more likely, compared to male colleagues, to foster developing people in schools (Table 13).

Black or African American principals were less likely, compared to White principals, to apply overall distributive leadership, distributive leadership functions setting direction,

managing the instructional program, and developing people (Table 13). Overall, Black or African American compared to White principals were consistent predictors of distributive leadership components and being Female, compared to male, is a slight predictor of distributive leadership applications.

Research question four addressed the relationship between the teachers' perception of the principal’s use of distributed leadership and the principal's leadership effectiveness. All distributive leadership functions were positively related to leadership effectiveness except the distributive leadership function redesigning the organization. Distributive leadership function setting direction was the strongest predictor of leadership effectiveness.

Teachers with certain characteristics were more likely to view their principals as effective leaders. Generally, teachers with master’s degrees compared to bachelor’s, teachers with between two and six years of educational experience compared to first year teachers, and female teachers compared to male teachers were likely to perceive the principal as an effective leader. Conversely, all categories of teachers’ ethnicity compared to Whites were less likely to perceive the principal as an effective leader. In regards to leadership effectiveness and principal characteristics, the level 2 (school level) of the hierarchical linear model evaluated those relationships and it was determined that those characteristics were not significantly related to leadership effectiveness measures.

CHAPTER 5

Discussion and Conclusions

Introduction

This chapter summarizes the key findings of this study. The purpose of this study was to understand the relationship between distributive leadership in a school and principal leadership effectiveness. This chapter reviews the implications of these findings for school and district leaders. Recommendations for future research on distributive leadership and leadership effectiveness in North Carolina schools are described as well.

While there is extensive theory on distributive leadership, there are few empirical studies regarding principals' actual use of distributed leadership in schools. Furthermore, a solid research foundation is helpful for assessing distributed leadership applications and organizational dimensions that enhance positive educational outcomes, such as leadership effectiveness (Harris, 2005; Woods, 2004). This study provides research information for narrowing the gap between theory and application.

Key Findings and Theoretical Implications

The findings of the study indicated that some principal attributes are related to distributive leadership in schools and some teacher attributes are related to perceived leadership effectiveness. Results add to knowledge related to principals' use of distributive leadership and perceived leadership effectiveness. The next sections examine findings and theoretical implications regarding the extent to which distributive leadership are practiced in public schools, identify characteristics of principals that are likely to practice distributive

leadership, and discuss distributive leadership and its relationships to leadership effectiveness.

Teacher and Principal Characteristics Regarding Leadership: Gender

Gender was discovered to have a significant relationship with distributive leadership components and leadership effectiveness. Being female compared to male was a positive predictor of principal leadership effectiveness. Results in the study suggest significant gender effects but do not indicate how much of the total variation in teacher perceptions of leadership effectiveness are explained by gender effects. This suggests that a greater range of plausible variables must be considered. The gender of the principal as leader and the teacher as follower are both important (Jantzi and Leithwood, 1996).

Some theorists contend that female leadership styles are assets in light of trends toward team-based management (Oakley, 2000). Some researchers noted that female principals attribute noted differences regarding leadership (Fowler, 1991; Kruger, 1996). The findings indicate that female principals are less likely compared to male principals to distribute the management of the instructional program. Female principals also are more likely to develop personnel in schools than male principals. This may be due to female principals being more affirming of school personnel regarding their personal and professional development, leading to higher ratings as effective leaders in this area.

Teacher and Principal Characteristics Regarding Leadership: Ethnicity

The effects of ethnicity on leadership practice and effectiveness ratings contribute to present knowledge. Asian, American Indian, African American, Hispanic, Mixed / Multiple, and other races of teachers were less likely to perceive their principals as effective as their

White peers. Although the study demonstrates that there were differences between Whites and non-White teachers in their perceptions of leadership effectiveness, it does not explain why these differences exist. Increased diversity leads to increased problems with communication and team cohesion. Literature has yet to produce definitive results of the interaction between multiple factors in leadership identity regarding gender and race (Richards and Loubier, 2008; Jackson et al., 2003). Some researchers found differences in orientation toward tasks and various styles of leadership in organizations (Fowler, 1991; Smith & Piele, 2006).

Different ethnicities teachers and principals provide other experiences and unique perspectives that affect leadership behavior, such as taking certain types of risks in performing leadership duties related to distributing leadership. Black or African American principals were less likely compared to White principals to apply general distributive leadership functions. Black or African American principals were less likely compared to White principals to set direction, manage the instructional program, and develop people.

Teacher and Principal Characteristics Regarding Leadership: Experience

Teacher years of education between 2 - 3 and 4 - 6 years compared to first year teachers were more likely to rate their principal as effective leaders. Also, teachers having a master's degree compared to those having a bachelor's degree were more likely to rate their principal as effective leaders. The results of this study indicate that there was no single all-inclusive list of leadership traits for principals. Effective leadership results supported the theory that leadership, specifically principal leadership, is a multifaceted process that escapes multiple explanations (Smith & Piele, 2006).

Distributive Leadership and Leadership Effectiveness

Distributive leadership is conceptualized into the four functions of setting direction, developing people, redesigning the organization and managing the instructional program (Leithwood et al, 2006; Leithwood & Riehl, 2003). The results of this study indicated that setting direction, developing people and managing the instructional program were related to leadership effectiveness. Redesigning the organization, which include items related to opportunities to learn from others and time to collaborate, was not significantly associated with leadership effectiveness in contrast to the results of the other three functions.

The results provide empirical evidence from a large and representative sample of schools that distributive leadership is indeed related to leadership effectiveness. The findings vary from Anderson, et al. (2009), Leithwood, et al. (2006), and Leithwood & Riehl (2003) in that they involved a sample size from 8 to 180 schools and were mostly qualitative in nature with mixed use of quantitative data. None of the studies verified the distributive leadership functions on a large scale across an entire state nor did they make direct, quantitative connections between distributive leadership and leadership effectiveness.

Distributive Leadership for Setting Direction

The distributive leadership function of setting direction was analyzed and mirrored Leithwood et al. (2006), indicating components such as having a identified shared vision, effective group decisions, teachers centrally involved in decision making, and giving teachers opportunities to contribute. Setting direction had the strongest relationship with leadership effectiveness. Survey responses and resulting trends across North Carolina indicate that teachers acknowledged that the faculty and staff members have a shared vision. Over 67% of

North Carolina teachers surveyed agreed with items related to setting direction in for sharing school vision, empowering group decisions, and giving teachers opportunities to contribute to a school's success. Results for setting direction support research that fostering acceptance of a shared and coherent set of group goals occur through strong collegial relationships and distributive leadership (Leithwood et al., 2006; Neuman & Simmons, 2000; Little, 1990).

Distributive Leadership for Developing People

In regards to the distributive leadership function of developing people, Leithwood et al. (2006) surmised that this function included the ideology of offering intellectual stimulation, individual support, and models of appropriate values and practices. Distributive leaders, in developing people, provide school atmospheres that allow teachers to determine the content of in-service professional development programs for developing and influencing the people in the school organization for improving professional group learning and attitudes (De Dreu & West, 2001; Harris, 2005; Leithwood et al., 2006). The developing people component had a small, negative relationship with leadership effectiveness.

This component of distributive leadership includes tenants for teachers being part of deciding the school budget, hiring personnel, and determining the professional development programs in schools as noted in Wahlstrom and Louis (2008). These components may not be effectively occurring in schools across North Carolina in that over 63% of the respondents had almost no role at all regarding components of developing people within distributive leadership. Many principals may still independently manage the functions of monetary allocations, the advertising and hiring of staff, and often times determine school professional development programs.

Distributive Leadership for Managing Instructional Program

The distributive leadership function of managing the instructional program had a weak association with leadership effectiveness. Across North Carolina, teachers acknowledged having a large role in devising teaching techniques, setting teaching techniques, assessment practices, and selecting instructional materials in support of the norms tied to this distributive leadership function (Wahlstrom & Louis, 2008). In North Carolina, over 57% of teachers noted a large role in managing the instructional program related to distributive leadership.

The distributive leadership function, as it relates to managing the instructional program, involves teacher professionalism and cooperation as a way of generating positive change in schools for distributing expertise by sharing and exposing classroom practices as a primary component contributing to success in schools (Harris, 2005; Ovando, 1994; Rosenholtz, 1989). The weak association may be attributed to tenants of professional learning communities that have yet to be realized or fully implemented across North Carolina. Professional learning teams that contribute directly to teachers' management of the instructional program regarding instructional practices, material selection and assessment practices (Wahlstrom & Louis, 2008).

Distributive Leadership for Redesigning the Organization

Components of the distributive leadership function of redesigning the organization, which include teachers having opportunity to learn from another, adequate time for professional development and time to collaborate, were not significant in its association with leadership effectiveness. Interestingly, over 65% of teacher respondents agreed that

components of redesigning organization were happening across North Carolina. Teachers' understanding of the components may vary with no degree of standardization and with different interpretations. Teachers may have opportunities to learn from one another through cooperative learning opportunities in discussions of assessments, sharing materials, and analyzing student learning outcomes. Conversely, redesigning the organization might not be a predictor of leadership effectiveness, since it is more related to the learning environment teachers create with one another rather than what the principal fosters as a leader. Keeping in mind that teachers who have specific opportunities to interact with their peers are likely to influence other teachers and be a part in shared decision making (Harris & Muijs, 2005; Neuman & Simmons, 2001; Wahlstrom & Louis, 2008).

Practical Implications

As shown in this study, distributive leadership is related to leadership effectiveness. Increasing policies and activities that influence distributive leadership through professional development and Master of School Administration (MSA) principal training programs at colleges and universities would be advantageous developing school leaders. Understanding teachers' perceptions of leaders assist administrative decisions and policies that lead to change within the current school leadership structure. Distributive leadership tenants lack full implementation, potentially because many principals do not understand distributive leadership, lack the capability to implement this type of leadership at their school, or think they are distributing leadership when they really are not. Many principals may conclude that by simply implementing professional learning teams or putting teachers on committees constitutes distributive leadership.

Distributive leadership theory and its direct application is a relatively new concept in school leadership, especially in North Carolina schools. However, in recent years there has been policies implemented that foster similar leadership tenants. The *North Carolina Professional Teaching Standards Commission* (NCPTSC) recommends that teachers work collaboratively in creating professional learning communities for developing goals and strategies for school improvement and enhancement of teacher working conditions. Within this professional organization framework and in conjunction with the North Carolina Teacher Working Condition surveys, distributive leadership strategies and concepts are being fostered across North Carolina, yet data from this study shows little implementation. As teachers demonstrate leadership in schools, they can provide input on the school budget, hiring of staff and selection of professional development (North Carolina Professional Teaching Standards, 2008). Observing the connections between policies, standards and practices, and using survey data helps to realize the application of distributive leadership practices in North Carolina schools.

Because the distributive leadership function of setting direction has such a strong relationship with leadership effectiveness, it is important to continue to focus on teaching principals how to craft a vision and align school decisions with vision. Investigating purposeful activities and natural leadership behaviors are central to understanding leadership proficiency. Principals across North Carolina who view the overall distribution of leadership as merely supplemental to their leadership style may result in leadership distribution that is weakly applied. Principals need to be purposeful in leading by planning distributive norms and systems of alignment along distributive notions and processes (Mascall et al., 2008).

Purposeful planning has the potential to increase leader effectiveness ratings and optimism among staff surrounding distributive leadership components (Mascall et al., 2008). Purposeful planning in applying forms of distribution provides more transparency and less suspicion about leaders, which results in teachers being more engaged with their colleagues in efforts of school leadership. Being intentional with teachers would foster purposeful planning for leadership distribution (Mascall et al., 2008). In contrast, when leadership defines improvement needs mainly as a reaction or on a whim for implementing a new program or fad, which so often happens in schools, there is less of a collective involvement of all staff.

Ethnicity makes a difference regarding teachers' perceptions of leadership effectiveness. There is a need to determine if race is related to prejudices or school context. Perhaps non-White principals are placed in situations where it is difficult to be an effective leader. If research indicates that it is prejudice, then professional development of teachers is necessary. If it is context, then there is a need to examine principal placement practices. This area needs to be studied further, especially in North Carolina, because there are a large number of African American principals. There appears to be no change in this trend for the foreseeable future.

Understanding distributive leadership, leadership effectiveness and teacher perceptions and their relationship to one another are critical to understanding and prescribing distributive leadership in schools. The data analyzed helps guide decision makers and policy developers regarding principals distributing leadership and how teachers can be leaders. The theory and empirical results help to create dialogue surrounding leadership effectiveness

using distributive leadership. This study adds teachers' perceptions to the information educational stakeholders need in order to make appropriate decisions pertaining to advancing and utilizing distributive leadership within schools and restructuring the administrative hierarchy. Teacher perceptions are useful when designing and implementing future research in distributive leadership, teacher leadership and professionalism, education and training, administrative structuring, and staff development opportunities.

The potential of distributed leadership to contribute to leadership effectiveness is somewhat intriguing and more research is needed focusing directly on this relationship. Harris and Muijs (2005) conclude that (a) distributed leadership practices are beginning in schools, yet are far from being the dominant school leadership configuration, (b) distributed leadership translates to sharing the most important tasks of schools, and (c) distributed leadership can synergistically work with more traditional leadership configurations. Distributed leadership is not likely to prosper, unless those in traditional leadership positions promote its practice (Harris, 2005).

Principals and other school leaders can benefit from knowing what elements of distributed leadership impact school leadership effectiveness. School leadership affects the school improvement processes and reforms. Successful distributive leadership models can inform administrators on how they can direct financial and personnel resources toward specific areas of distributive leadership related to setting direction, managing the instructional program and developing people within a redesigned organization. Many principals don't necessarily understand distributive leadership or fear the results of relinquishing 'control' of areas suggested for distribution. Distributive leadership requires

that the practice of distributing the four components of setting direction, managing the instructional program, developing people and redesigning the organization. Understanding and being philosophically oriented toward these four traits are what is necessary for leadership distribution to be a reality in schools.

Limitations

An acknowledgement needs to be made regarding the limitations of the study, specifically as they relate to the use of the survey instrument. The survey used is only an approximate measure of distributive leadership functions and leadership effectiveness. Better results may have been realized with the use of an instrument tailored specifically for measuring distributive leadership and leadership effectiveness.

One difficulty in gaining an accurate measure of distributive leadership functions may depend on the fact that the original survey instrument was not designed for this purpose. Confirmatory factor analysis determined four factors similarly associated with the distributive leadership functions in the 2008 North Carolina Teacher Working Conditions Survey (NCTWCS). The survey questions ultimately chosen and used were more practical and in alignment with distributive leadership theory. A stronger connection may have occurred if a survey instrument was designed to measure distributive leadership functions and leadership effectiveness to improve construct validity. Furthermore, it is assumed that teachers' perceptions are accurately measured in the survey instrument. However, as long as the extent to which teachers truly believe that surveys are confidential or anonymous the trustworthiness and hence the accuracy of the measures are seemingly valid.

The analyses do not account for other variables that may impact use of distributive leadership and leadership effectiveness, such as school and community characteristics, percent of students on free and reduced lunch, and other contextual variables. These additional characteristics may explain more of the variance in the models. Cases were deleted when no information on principal variables existed, which may have biased results.

Directions for Future Research

Including measures of contextual variables would provide a richer description of distributive leadership and leadership effectiveness. Distributive leadership theory may also benefit from analyzing conditions or school types and size, socioeconomic status, and so forth that foster or inhibit leadership distribution. Including measures of contextual variable that may facilitate or impede the implementation of distributive leadership components could also be included as well as reform movements to see if the presences of certain reforms in schools influence distributive leadership.

Harris (2003) makes the general claim that ignoring teacher leadership is knowingly investing in leadership that makes little or no difference in school improvement. Accomplished school reform and documented student learning, according to Glickman, Gordon, and Ross-Gordon (2001), are greatly characterized through distributed leadership within schools. Connecting distributive leadership to student achievement is an important avenue of research for bringing greater value to distributive leadership and school improvement. Distributive leadership results in present study and in previous research harness and enhance talents and knowledge leaders need to create a school climate that functions effectively (Harris, 2005). If distributive leadership theory is to provide more

influence in guiding leadership practices, then results in present study and previous research help to provide a frame of reference that can inform future practice (Spillane et al, 2004).

Further research needs to move beyond simple leadership measures of effectiveness to multiple measures of leadership effectiveness and diverse measures. In doing so, the strength of one measure to assess a particular dimension will offset the weakness of another measure and the need for multiple sources. The concept of leadership distribution patterns discovered reflect theory and research, suggesting synchronized styles of leadership distribution contribute to productive organizations beyond simply leadership effectiveness measures (Mascall et al, 2008).

This study relies primarily on teacher perceptions. Information and data gathered on peers of principals and their immediate supervisor would provide valuable insight to leadership effectiveness measures and distributive leadership application in schools. Gathering data on actual behaviors exhibited in distributive leadership would be beneficial to improve the practice of leadership (Spillane et al, 2004). Without knowledge of the teachers' perceptions, it is unlikely that positive change will occur to make distributive leadership ideals possible. It is helpful to understand and collect data on what teachers are saying and thinking about leadership. Evidence from this study contributes to the broader purpose of defining distributive leadership for its appropriate application in schools, using teacher perceptions. It is necessary to uncover teacher and principal perceptions of barriers that keep distributive leadership components from occurring in the school.

Further research is needed to identify problems and issues that inhibit principals from distributing leadership in schools to teachers in regards to internal politics, leader philosophy,

personality, and how these might be addressed. In the review of literature, very little information was found addressing the history of distributive leadership and leadership effectiveness. Understanding how teachers' perceptions of leadership effectiveness are formed and why certain characteristics such as race and gender are factors are important. Most empirical research on leadership and many evaluations of leaders and schools rely on the views of those who experience the leadership (i.e. teachers).

Overcoming the obstacles within the current hierarchical system must also be examined for involving distributive leadership theory and other collaborative theories as necessary to bring about the improvements that are not being addressed by traditional education leadership theories. Follow up qualitative methods can be employed to close the gap in the relationships and understandings that the methods used here failed to provide. Case study examples of distributed leadership can provide more explicit details and help categorize circumstances in which distributed leadership can thrive (Harris, 2005).

This is the first study of its kind to analyze connections between distributive leadership functions proposed by Leithwood et al. (2006) and leadership effectiveness. Yet, only three of the four functions of distributive leadership were associated with leadership effectiveness. Hopefully, other studies and methods will help solidify these traits and their connections to leadership effectiveness. Certain characteristics of principals were associated with using certain distributive leadership functions. It would be beneficial to explore why individuals with these traits favor particular elements of distributive leadership.

Expounding on the distributive leadership model in schools, its perspectivees, and forms of practice are necessary in order to understand the relationship between distributed

leadership and improving organizations. Patterns of distributive leadership are paths to organizational effectiveness (Leithwood et al, 2006). Interesting findings may be uncovered by branching out into other areas of the country, specifically urban areas, union states, states with different requirements for principals, and even international data. Considerations are needed to replicate the study in different contexts such as urban areas and teacher union states, due to the fact that there are a limited number of urban areas in North Carolina and it is a right to work state regarding unions.

The principal and teacher attributes in regards to race, gender, years of education, and highest degree in respect to distributive leadership are important factors to consider. Principals and teachers in schools from diverse backgrounds and experience affect distributive leadership employed in schools. Knowing how these components affect leadership effectiveness and distributive leadership applications provide insight into the complex and diverse natures of schools as organizations. The quantitative methods used here provide insight regarding characteristics and associations with distributive leadership and leadership effectiveness.

Barriers to distributive leadership related to teacher characteristics and school dynamics need review. Principal trust in teachers and teachers trust in principals may be considered as factors contributing to distributive leadership application. Teacher characteristics may be as important as the principals' for the implementation of distributive leadership. As principals grow more comfortable with their roles of modeling and guiding distributive leadership, teachers as leaders will become more accepting and/or trusting of the distributive leadership functions in schools. The variables (attributes) used in this study help

researchers and practitioners to not only better understand leadership effectiveness but also distributive leadership tendencies of principals in the school organization.

As with Leithwood and Riehl (2003), this study parallels their findings in that the principals' management style, in this case distributive leadership, is related to school improvement, teamwork, and effectiveness. Exploring evidence of leadership behaviors and influences associated with core leadership practices, rather than primarily teacher perceptions and their leadership roles, will help to understand distribution of leadership.

Without continued empirical research, distributive leadership theory may fall away as many valuable educational concepts do when they are not examined and put to use. Teachers and administrators must be willing to be scrutinized and possibly be criticized in order to identify and make the necessary changes needed regarding this structural rearrangement. The influence of distributed leadership theory is a shift in thinking about leaders and leadership development. Distributive leadership challenges traditional and individualistic leadership styles but also reclaims leadership involvement for teachers and other staff in schools. As the association between distributed leadership and organizational effectiveness becomes more clear, the essential need for flexible and responsive styles of leadership increases (Fullan, 2001; Harris, 2005; Leithwood and Jantzi, 2000).

It is important to know more detail about what the patterns for leadership distribution looks like in specific practice. At this time, the description of the practice patterns is characterized as weakly applied in schools. Work by Spillane et al. (2007) examined ways in which principals and teachers shared in leading activities, and how the basis of leadership fluctuate between activities in schools. Principals and teachers need to determine approaches

to share leadership through the support of each other in a trusting, mutual environment (Mascall et al., 2008). The distributive approach may lead to school improvement.

It is important to understand more about effective distributed leadership practice, how it is fostered and developed. More empirical studies of distributed leadership that cross-examine the relationships between distributed leadership and school effectiveness are needed. Distributed leadership theory offers an exciting alternative understanding about leadership practice with empirical foundations so that it does not become another leadership theory that proves to be disingenuous or relinquished altogether. Insight gained from this report can be used to help district and school administrators better understand how effective school leadership and distributive leadership are perceived. Teacher leadership will not be the answer to problems of leadership in schools; though further research and development involving teachers and administrators will help to advance improvements regarding leadership and redesigning the organization of schools.

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