

The Effect of Principal Leadership on Student Academic Achievement

J. Brent Cooper

University of North Carolina at Chapel Hill

Dan R. Saurino

Anderson University

Dustin N. Johnson

High Point University

Larry R. Knighton

Anderson University

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Abstract

The purpose of this quantitative study was to examine the effect of principal leadership on student academic achievement at a suburban, public high school (Suburban Public High School; SPHS). The effect of principal leadership on student academic achievement was measured through an analysis and comparison of student academic performance on ten, state-mandated, End-of-Course tests. Data which measured student academic performance on ten, state-mandated, End-of-Course tests were obtained from the annual NC School Report Cards for SPHS. Teachers' perceptions of the principal leadership of Principal A during the first school year, and Principal B during the second school year, along with the effect of these principals' leadership on student academic achievement were measured through an analysis of the school leadership domain for two administrations of the North Carolina Teacher Working Conditions Survey (NCTWCS) conducted at SPHS in the late spring of both years. School leadership domain subscale scores were calculated for all questions with the same Likert scale responses within the school leadership domain. The researchers hypothesized that principal leadership will have an effect on student academic achievement at SPHS as measured by student End-of-Course test data. Results indicated that principal leadership did have an effect on student academic achievement and teachers' perceptions of working conditions during the two school years. Student academic achievement was greater at SPHS during the second school year under the leadership of Principal B, as were teachers' perceptions of the school leadership domain, as indicated by school leadership domain subscale scores and the percentage of teachers responding positively. An important implication of this study is the need for school districts to annually assess the effect of principal leadership on student academic achievement at its schools to determine if changes or improvements in principal leadership at a school need to be made.

The Effect of Principal Leadership on Student Academic Achievement

The effect of principal leadership on student academic achievement and teachers' perceptions of working conditions has become an increasingly popular research topic over the past decade in the state of North Carolina and in other states across the nation. The 2008 NCTWCS measures teachers' and licensed educators' perceptions of principal leadership at their school through twenty-two, Likert scale response questions within the school leadership domain. The reason for the increased emphasis on teacher working conditions research in North Carolina and other states which have followed North Carolina's lead and replicated modified versions of the NCTWCS in their states is the "direct effect that working conditions have on both teacher attrition (and likewise teacher retention) and ultimately, student achievement" (Hirsch, 2005a; Hirsch, Emerick, with Church & Fuller, 2006a; Hirsch, Emerick, with Church & Fuller, 2006b; Hirsch, Emerick, with Church & Fuller, 2006c; Hirsch, Emerick, with Church & Fuller, 2007; Hirsch & Church, 2009a).

The state of North Carolina has taken the lead in its development and biennial administration of the NCTWCS to assess teachers' perceptions of working conditions, and thus principal leadership. However, the lack of adequate state funding has prevented an annual administration of the NCTWCS in the state of North Carolina and in other states. The inability of states to annually administer Teacher Working Conditions Surveys (TWCSs) to measure teachers' perceptions of working conditions, and hence, teachers' perceptions of leadership, has limited the amount of data public school superintendents have accessible to evaluate principal leadership at their schools.

On the other hand, public school superintendents have annual student academic achievement data which they can use to evaluate the effectiveness of instruction at a school. In the state of North Carolina, annual student academic achievement in a school is measured by student performance on state-mandated, End-of-Grade and End-of-Course tests. In North Carolina, End-of-Course tests are the primary academic data used by school leaders at the school, district, and state levels to measure high school student academic achievement at a school for a given school year. Student academic achievement data is used as an evaluative measure of the effectiveness of teachers' within a classroom and a principal's leadership at a school.

Previous research studies which have analyzed NCTWCS data have repeatedly recognized the importance of principal leadership to student academic achievement, teachers' perceptions of working conditions, and teachers' future employment decisions (Hirsch, 2009a; Hirsch, 2009b; Hirsch & Church, 2009a; Hirsch & Church, 2009b; Hirsch & Soiberg with Robertson & Church, 2009; Maddock, 2009; Moir, 2009). Due to one researcher's access to a suburban, public high school in North Carolina (Suburban Public High School) as an assistant principal at this school during the 2008-09 school year, the researchers made the decision to examine principal leadership's effect on student academic achievement for the 2007-08 and 2008-09 school years while SPHS was under the leadership of two separate principals. A key factor in this researcher's decision to pursue this research project was the unique opportunity to become the first school in the state of North Carolina to administer the NCTWCS in two consecutive years. The potential to re-administer the 2008 NCTWCS for the 2008-09 school year (hereafter referred to as the 2009 NCTWCS for the purpose of this study) provided the researchers the opportunity to examine principal leadership's effect on student academic achievement at a school for consecutive years for the first time since the first iteration of the NCTWCS in 2002. Furthermore, the change in principal leadership at SPHS for the 2008-09 school year also presented a unique opportunity to assess the effect of the principal leadership of two different principals on student academic achievement at SPHS for two consecutive years. With the number of states across the nation growing each year that administer TWCS's modeled after the NCTWCS to measure teachers' perceptions of working conditions, and hence principal leadership within their public schools, the

researchers viewed this research project as a unique opportunity to provide quantitative data on the effect of principal leadership on student academic achievement supported by school leadership, teacher working conditions data at a school for two consecutive years. After conducting a thorough literature review on the history of teacher working conditions surveys in the state of North Carolina and across the nation, it does not appear up to this point, primarily due to local and state funding restrictions that prevent TWCS's from being administered on an annual basis, that a research study has examined principal leadership's effect on student academic achievement supported by school leadership, teacher working conditions data for consecutive years into its methodology.

SPHS was the unit of analysis and the source for the sample of teachers and licensed-educators for this study. SPHS is located in central North Carolina between the Triad and Triangle regions of North Carolina. The teacher sample for SPHS included approximately seventy certified teachers, of which 95% were considered highly-qualified according to NC School Report Card data for SPHS and as defined by the North Carolina Department of Instruction for the 2007-08 and 2008-09 school years. Six additional licensed, certified educators at SPHS were included in the sample for each administration of the NCTWCS. The average student enrollment for SPHS was 965 students for the 2007-08 and 2008-09 school years.

Student academic performance on ten, state-mandated, End-of-Course tests were compared for students who took state mandated, End-of Course tests under the leadership of Principal A at SPHS for the 2007-08 school year and to students who took state mandated, End-of-Course tests under the leadership of Principal B at SPHS for the 2008-09 school year. The results indicated that students were more proficient (scores of three or four on a one to four scale) on eight of the ten, state-mandated, End-of-Course tests under the leadership of Principal B during the 2008-09 school year than students while under the leadership of Principal A during the 2007-08 school year.

School leadership domain means were compared for teachers working for Principal A at SPHS during the 2007-08 school year as measured by the 2008 NCTWCS to teachers working for Principal B at SPHS during the 2008-09 school year as measured by the 2009 NCTWCS. The results indicated more positive teachers' perceptions of the school leadership domain for teachers who worked for Principal B during the 2008-09 school year when compared to teachers who worked for Principal A during the 2007-08 school year according to domain means and the percentage of positive teachers' responses for thirteen questions within the school leadership domain that most clearly measure principal leadership.

History of the North Carolina Teacher Working Conditions Survey

The first, statewide administration of the NCTWCS was conducted during the 2001-02 school year. This original, paper/pencil survey was administered to all teachers and licensed, public educators working in public schools in the state of North Carolina. According to Sawchuck (2010, March 31), since the inception of the NCTWCS in North Carolina in 2002, at least fifteen states and two large, urban school districts across the nation have followed North Carolina's lead by administering modified versions of the NCTWCS in their states and school districts to measure teachers' perceptions of working conditions in their schools. States and large, urban school districts that have administered modified versions of the NCTWCS as of 2010 include the states of Alabama, Arizona, California, Colorado, Georgia, Illinois, Kansas, Maine, Maryland, Massachusetts, Ohio, South Carolina, Vermont, Virginia, and West Virginia, as well as the large urban school districts of Clarke County, Nevada and Fairfax County, Virginia. The reason for the increased emphasis on teacher working conditions research in North Carolina, other states, and large school districts across the nation is the "direct effect that working conditions have on both teacher attrition (and likewise teacher retention) and ultimately, student achievement" (Hirsch, 2005a; Hirsch, Emerick, with Church & Fuller, 2006a; Hirsch, Emerick, with Church & Fuller, 2006b; Hirsch, Emerick, with Church & Fuller,

2006c; Hirsch, Emerick, with Church & Fuller, 2007; Southeast Center for Teaching Quality, 2003). This relationship, as explained by the Center for Teaching Quality concluded:

Data collected and analyzed by the Center for Teaching Quality (CTQ, formerly named the Southeast Center for Teaching Quality) show powerful empirical links between teachers' working conditions and student achievement in elementary, middle, and particularly high schools. The research proves that improved working conditions are not only central to teachers' well-being and satisfaction, but they are also important to the success of the students they serve. (p.17)

The reason for the decision by the researchers to focus on the effect of principal leadership on student academic achievement at SPHS is based on the inclusion of school leadership (formerly referred to as leadership in prior NCTWCSs) as one of the five teacher working conditions domains measured by each administration of the NCTWCS. The school leadership working conditions domain measures teachers' perceptions of the principal leadership at a school. In 2008, the leadership domain was renamed school leadership to distinguish between principal leadership and teacher leadership (the educator leadership domain).

Following the second iteration of the NCTWCS in 2004, Hirsch (2005b) noted from his analysis of data for the 2004 NCTWCS that "working conditions are critical to increasing student achievement and retaining teachers" (p. 3). Hirsch also discussed the correlations between teachers' perceptions of working conditions as reported in the 2004 NCTWCS and overall school academic achievement. Hirsch noted that "time is the only working condition that is not connected to student achievement when examining basic correlations" (p. 5). Hence, Hirsch recognized the correlation of the school leadership working condition domain, the independent variable whose effect is being measured in this study, to student academic achievement in his analysis of the 2004 NCTWCS. For the purposes of this study, the researchers will also refer to school leadership as principal leadership as principal leadership at SPHS is the independent variable whose effects are being examined.

Hirsch's (2005b) findings from his analysis of the 2004 NCTWCS provided additional support for the relationships between teacher working conditions, specifically principal leadership (leadership), and student academic achievement. Hirsch concluded that teachers held "more positive perceptions in higher performing schools" for all teacher working conditions domains but time (p. 5). Hirsch explained that differences between higher performing and lower performing schools were all significant, with the largest differences occurring in the leadership domain. Hence, Hirsch recognized the correlational relationship between principal leadership and student academic achievement.

In 2004 the South Carolina Teacher Working Conditions Initiative established teacher working conditions as an area for increased research focus in order to examine the effect of teachers' perceptions of working conditions on teacher retention and ultimately student achievement. The state of South Carolina, in partnership with the state of North Carolina and the SECTQ, adopted and administered the 2004 NCTWCS to all licensed public educators in South Carolina public schools in the spring of 2004 with several modifications to best address the contextual circumstances found in South Carolina public schools. Hirsch (2005a) found from his analysis of the 2004 SCTWCS that "teacher working conditions are important predictors of student performance" (p. 6). Hirsch noted data indicated that "leadership had a significant and positive impact on student performance" (p. 9). Converse to findings of the 2002 and 2004 NCTWCS and the importance of leadership to student academic achievement, the SCTWCS found that schools where teachers perceived leadership more negatively actually correlated in higher performance on two of the

academic accountability measures in the state of South Carolina. Nevertheless, leadership did have a significant impact on accountability ratings for schools in South Carolina.

In 2006, the third NCTWCS, the second administration of the online version of the NCTWCS, was conducted. In his analysis of the 2006 NCTWCS data, Hirsch (2007b) identified multiple correlations between student academic achievement as measured by the North Carolina performance composite (the percentage at or above Level III/proficient on End-of-Grade and End-of-Course tests at a school) with teachers' perceptions for each of the five teacher working conditions domains. From these correlations it was found that time was "only weakly correlated with the performance composite at the elementary and middle schools levels," even though teachers listed time most frequently as the domain most critical to improving student academic achievement (p. 8). Facilities and resources, leadership and empowerment were all significantly correlated to student achievement across all school levels: elementary, middle, and high school.

When looking at middle school academic growth, Hirsch (2007b) shared, "working conditions were the strongest predictors of middle schools meeting or exceeding growth expectations" (p. 12). When looking at high school academic growth, Hirsch concluded that:

School leadership (referred to as principal leadership in this study) was shown to significantly impact growth at the high school level. High schools with a school leadership domain of greater than 3.90 were 2.2 times more likely to meet or exceed growth expectations. ...no other student, school, or teacher background variables had a statistically significant impact on growth. (p. 13).

The 2008 NCTWCS, the survey instrument used for gathering NCTWCS school leadership data at SPHS for this research study, was conducted in the spring 2008. According to Hirsch (2009b), eighty-seven percent of licensed-educators responded to the 2008 NCTWCS, "the highest proportion since the advent of the survey in 2002" (p. 1). For the first time, "every traditional public school in the state of North Carolina reached the minimum response rate (40 percent) necessary to have valid data" (p. 1). For the first time the 2008 iteration of the NCTWCS also included a separate survey for principals to complete that assessed principals' perceptions of the support they receive from their school districts. The importance of the 2008 NCTWCS data for school administrators and teachers is far-reaching. Maddock (2009) identified the correlation between the 2008 NCTWCS data and student academic achievement. Maddock pointed to the 2008 NCTWCS data's positive effects in "providing every public school with their own data to use as a tool to improve student learning conditions" (p. 1). Maddock concludes by stating "analyses conducted by the New Teacher Center demonstrate significant connections between positive teacher working conditions and student achievement" (p. 1). Likewise, Hirsch & Church (2009b) concluded "the conditions teachers face in schools and classrooms are essential elements of student achievement" (p. 1).

Purpose of the Study

The purpose of this study was to examine the effect of principal leadership on student academic achievement at SPHS during the 2007-08 and 2008-09 school years. The researchers hypothesized that principal leadership will have an effect on student academic achievement. Principal leadership's effect on student academic achievement will be measured by student academic performance on state-mandated, End-of-Course tests. Teachers' perceptions of principal leadership will be measured based on school leadership domain data collected from administrations of the NCTWCS during the 2007-08 and 2008-09 school years. Principal A served as the principal of SPHS during the 2007-08 school year. Principal B served as the principal of SPHS during the 2008-09 school year.

Perspective or Theoretical Framework

The decision to examine the effect of principal leadership on student academic achievement at SPHS originated from the change in principals at SPHS at the end of the 2007-08 school year. The inability for a normal transition in principal leadership from Principal A to Principal B to take place prior to the beginning of the 2008-09 school year due to Principal B's inability to exit an existing principal contract in another school district further convinced the researchers of the potential significance in examining the effect of the principal leadership of Principal A and Principal B at SPHS on student academic achievement. For the purposes of this study, principal leadership was analyzed based on data obtained from the school leadership domain from the 2008 and 2009 administrations of the NCTWCS at SPHS. The decision to examine the effect of principal leadership on student academic achievement at SPHS was based on the presence of accessible, secondary data sets which measured student academic achievement on ten, state-mandated, End-of-Course tests for the 2007-08 and 2008-09 school years. Student academic achievement data on state-mandated, End-of-Course tests was obtained from the NC School Report Cards for SPHS for the 2007-08 and the 2008-09 school year.

Several factors led this researcher to focus on teacher working conditions as one of the dependent variables potentially affected by principal leadership in this study. First of all, Herzberg (1966) in his motivational-hygiene theory identified working conditions as one of several factors potentially affecting worker dissatisfaction. The second factor was the presence of the accessible, secondary data set from the 2008 NCTWCS for SPHS. The final factor was the potential to re-administer the 2008 NCTWCS at SPHS for the 2008-09 school year (2009 NCTWCS). Through a collaborative partnership with LEARN NC, the non profit state organization responsible for administering the NCTWCS to all public schools in the state of North Carolina every two years, the researchers were able to gather data on principal leadership at SPHS through the school leadership domain for two consecutive years. The researchers analyzed the hygiene factor, working conditions, through the lens of Herzberg's motivational-hygiene theory of worker satisfaction, specifically focusing on the worker dissatisfaction component, or hygiene lens. Whereas Herzberg looked at both the motivational and hygiene factors affecting worker satisfaction and dissatisfaction, this study specifically focused on the hygiene factor, working conditions, and more specifically, the school leadership domain.

The major research hypothesis tested in this study suggested Principal B's leadership will have a greater effect on student academic achievement at SPHS during the 2008-09 school year than the leadership of Principal A during the 2007-08 school year as measured by student academic performance on ten state-mandated End-of-Course tests for the 2007-08 and 2008-09 school year.

Methods

SPHS served as the unit of analysis for the study. The teachers and licensed-educators working at SPHS, along with the students taking at least one of the ten state-mandated End-of-Course tests for the 2007-08 and 2008-09 school years, comprise the sample for the study. A quasi-experimental, non-equivalent control group design was established as described by Campbell and Stanley (1963) for the purposes of examining the effects of principal leadership on student academic achievement at SPHS under the principal leadership of Principal A in the 2007-08 school year, and Principal B, in the 2008-09 school year. According to Campbell and Stanley, quasi-experimental, non-equivalent control group designs are used in social settings in which the researcher can introduce something like experimental design into his scheduling of data collection procedures even though he lacks the full control over the scheduling of experimental stimuli which makes a true experiment possible. (p. 204). The nonequivalent control group design was chosen by the researchers since the control group (SPHS under the leadership of Principal A)

and the treatment group (SPHS under the leadership of Principal B) did not have what Campbell and Stanley referred to as “pre-experimental sampling equivalence” (p. 217). Instead of “pre-experimental sampling equivalence,” Campbell and Stanley explained that the groups within a nonequivalent control group design represent “naturally assembled collectives such as classrooms” (p. 217). The “naturally assembled collectives” that made up this study’s control and treatment groups is the licensed faculty and students at SPHS under the leadership of Principal A during the 2007-08 school year, and under the leadership of Principal B during the 2008-09 school year. Campbell and Stanley explained that within a nonequivalent control group design, “the assignment of X to one group or the other is assumed to be random and under the experimenter’s control” (p. 217).

Campbell and Stanley (1963) suggested a major disadvantage when selecting a nonequivalent control group design is that study subjects are not randomly assigned to the treatment and control groups from a common population as subjects are when using a pretest-posttest control group design. Campbell and Stanley explained that the use of a nonequivalent control group design “reduces greatly the equivocality of interpretation over what is obtained” than when pre-experimental and true experimental designs are used (p. 217).

The presence of an accessible, secondary quantitative data set which includes school leadership data was one of the determining factors in selecting a quantitative approach for this study. Teachers’ perceptions of the principal leadership at SPHS were measured by looking at teachers’ responses to questions within the school leadership domain within the 2008 NCTWCS in the spring 2008, and through a second administration of the 2008 NCTWCS survey at SPHS in the spring 2009 (2009 NCTWCS) for the 2008-09 school year. 2008 NCTWCS data is accessible to the general public at <http://ncteachingconditions.org/reports08/>. The second administration of the NCTWCS for the 2008-09 school year was made possible through a collaborative partnership with LEARN NC, the state-funded, non-profit organization responsible for administering statewide administrations of the NCTWCS. SPHS was the only school in the state of North Carolina to formally administer the 2008 NCTWCS for the 2008-09 school year.

During the 2007-08 school year SPHS was led by Principal A. Principal A completed his/her third consecutive year as the principal at SPHS during the 2007-08 school year. Principal A was assigned to a new administrative leadership role in the central office of the school system where SPHS was located for the 2008-09 school year. Principal B was named as the succeeding principal at SPHS in the summer 2008. However, due to administrative contractual obligations to another school district, Principal B was not able to begin full-time service as the principal of SPHS until September 2008. During this time, Principal A and Principal B shared the principal’s duties at SPHS.

A second reason the researchers chose a quantitative approach was the convenience of using the secondary data sets for the school leadership domain within the 2008 NCTWCS, and for the state-mandated, End-of-Course tests for the 2007-08 and 2008-09 school years for SPHS. Using these accessible, secondary data sets removed potential restrictions that might have been encountered from teachers, administrators, or host school districts if extensive primary research had been conducted with sample participants. Using primarily secondary data sets for this research project made it easier for the researchers to obtain permission from Principal B to re-administer the 2008 NCTWCS at SPHS during the spring 2009 to analyze teachers’ perceptions of principal leadership for Principal B during the 2008-09 school year. Principal B, with the assistance of one of his teachers, was able to establish the collaborative venture with LEARN NC to re-administer the 2008 NCTWCS at SPHS in the spring 2009. The researchers were connected with Ms. Keri Church, Data and Survey Specialist at LEARN NC, and permission was granted to administer the 2008 NCTWCS during the 2008-09 school year as the 2009 NCTWCS at SPHS. To ensure confidentiality of all

survey respondents (the teachers and licensed educators at SPHS) all data was collected online by Ms. Church and LEARN NC. LEARN NC declared that due to the significant cost of analyzing data for the re-administration of the survey, only frequency counts for all non-teacher demographic questions for the re-administration of the 2008 NCTWCS for the 2008-09 school year would be provided to the researchers. Data analysis, including the calculation of the school leadership domain means for all questions with the same Likert scale responses, would have to be performed by the researchers. Furthermore, an electronic data file encompassing the responses of all survey participants would not be provided to the researchers in a deliberate effort to protect the confidentiality of the survey respondents from SPHS during the 2008-09 school year. This is a methods limitation that the researchers will elaborate on in greater detail at a later time.

The reason a quantitative approach was selected by the researchers for analyzing the effect of principal leadership on student academic achievement at SPHS was due to the accessibility of annual NC School Report Cards for SPHS. NC School Report Cards contain student academic performance data from the ten, state-mandated, End-of-Course tests that high school students were required to take during the 2007-08 and 2008-09 school years. According to the state website for NC School Report Cards at <http://www.ncschoolreportcard.org/src/faq.jsp#1>, NC School Report Cards have been used since their creation in 2001 as a public information tool to “provide parents and others who are interested in the public schools in North Carolina with information about school, district, and state-level data in a number of areas” (p. 1). Student academic achievement data on the ten, state-mandated, End-of Course tests for the 2007-08 and 2008-09 school years as reported on the NC School Report Cards for SPHS were retrieved at <http://www.ncreportcards.org>.

A significant amount of time and money was saved by using the pre-existing 2008 NCTWCS, the corresponding school leadership domain secondary data set from the 2008 NCTWCS, and the End-of-Course test data available from NC School Report Cards for the 2007-08 and 2008-09 school years. New surveys did not have to be created, pilot tested, and administered within schools or school districts, nor did massive databases containing student and school academic achievement data have to be searched, appropriate data selected, and re-organized into quantitative files for use in this study.

School leadership domain subscale means were calculated for the school leadership domain from the administration of the 2008 NCTWCS during the 2007-08 and 2008-09 school years at SPHS. Questions written in a Likert scale format with the answer choices “strongly disagree, somewhat disagree, neither disagree nor agree, somewhat agree, or strongly agree” were included in the school leadership domain subscale mean calculations. The rationale for including only questions with the same Likert scale responses was that it would allow for the comparison of the school leadership domain subscale means which assessed the leadership of Principal A during the 2007-08 school year and Principal B during the 2008-09 school year.

Establishing Reliability and Validity

Reliability and validity were officially established for the NCTWCS for the first time following the 2008 iteration of the NCTWCS. Ellen Moir, Executive Director of the New Teacher Center at the University of California at Santa Cruz, produced a report titled, “Validity and Reliability of the North Carolina Teacher Working Conditions Survey”, which described the steps taken to establish the validity and reliability of the 2008 NCTWCS. Moir (2009) stated “the validity of the North Carolina TWCSurvey addresses questions of whether the instrument is a true measure of what it is attempting to assess; in this case the presence of teacher working conditions” (p. 1). Content, construct, and predictive validity were established or re-established as a result of Moir’s study.

The 2008 NCTWCS has retained the same core structure as the initial 2002 NCTWCS with questions focused on the same five teacher working conditions domains that the first administration of the NCTWCS consisted of in 2002. Two teacher working conditions domains, teacher empowerment and leadership, were renamed as educator leadership and school leadership for the first time for the 2008 iteration of the NCTWCS.

Pilot Study

No pilot study was conducted by the researchers for this study. However, CAE (2003) indicated that in the fall of 2001 the initial version of what was to become the 2002 NCTWCS “was administered in a pilot study to 2,300 teachers and administrators in 60 schools throughout the state” (p. 26). The prior administrations of the NCTWCS in 2002, 2004, 2006, 2008, and 2010, along with the recent adoption, modification, and administrations of the NCTWCS in several other states and at least two large city-school districts across the country, in essence, served the purpose of a pilot study or pilot test the researchers might have conducted for this study.

Quantitative statistical procedures. Quantitative analysis statistical software was not used for data analysis procedures for this study due to several limitations in the access to data for the 2008 NCTWCS, and due to the supervisory relationship of one of the researchers to survey respondents for the administration of the 2008 NCTWCS during the 2008-09 school year. The limitations to the quantitative analysis of the school leadership domain, NCTWCS data which resulted in the inability to control for potential covariates such as teacher demographics variables that may have explained a portion of the variance in teachers’ perceptions of principal leadership is explained in greater detail in the “Limitations” section of this report. Hence, the researchers focused on the change in the school leadership domain subscale means and the percentage of positive responses to thirteen questions within the school leadership domain that best assessed principal leadership within the 2008 NCTWCS for the 2007-08 school year while SPHS was under the guidance of Principal A, and for the 2008-09 school year while under the leadership of Principal B.

In this study, the independent variable that was examined through the use of a nonequivalent control group design was principal leadership (referred to as school leadership by the 2008 NCTWCS). The effects of the principal leadership of two successive principals at SPHS were examined in this study. The leadership of Principal B during the 2008-09 school year served as the treatment group. The leadership of Principal A during the 2007-08 school year served as the control group. The dependent variable for this study was student academic achievement. Student performance on ten state-mandated End-of-Course tests (English I, Algebra I, Algebra II, Geometry, Biology, Chemistry, Physical Science, Physics, Civic & Economics, and U.S. History) served as co-dependent variables for this study.

The first stage of quantitative analysis required the researchers to examine student academic performance on the ten state-mandated End-of-Course tests for SPHS for the 2007-08 and 2008-09 school years. End-of-Course test data for SPHS was retrieved from NC School Report Cards for SPHS at <http://www.ncreportcards.org>. NC School Report Card data indicated the percentage of SPHS students who were proficient on each of the ten state-mandated End-of-Course tests for the 2007-08 and 2008-09 school years. Student performance on End-of-Course tests was analyzed for the 2007-08 school year while SPHS was under the leadership of Principal A and for the 2008-09 school year while under the leadership of Principal B.

In the second stage of quantitative analysis of the data for this study the researchers focused on teachers’ perceptions of the school leadership domain as measured by teachers’ responses to the fourteen questions on school leadership within the 2008 NCTWCS during the 2008 and 2009 administrations of the NCTWCS at SPHS. The researchers analyzed teachers’ responses to each individual question within the

school leadership domain for the 2008 NCTWCS and 2009 NCTWCS in order to gain a more in-depth understanding of teachers' perceptions of principal leadership as measured by the school leadership domain, while SPHS was under the leadership of Principal A and Principal B. The researchers calculated the percentage of survey respondents that "Somewhat Disagree/Strongly Disagree" and "Somewhat Agree/Strongly Agree" to each school leadership question for the 2008 and 2009 NCTWCS at SPHS.

The variance in student academic achievement and teachers' perceptions of school leadership is sometimes attributed to select extraneous variables such as student characteristics and teacher demographics at a school. Teacher demographic and student/school characteristics variables are often imported as covariates in a quantitative statistical process known as an ANCOVA. ANCOVAs control for covariates' effects and estimate the variance that should be attributed to covariates and not to the independent variable in a research study. The analysis of the covariates' effects on student academic achievement could have explained variance that might otherwise be attributed to principal leadership. Hence, teacher demographics and student/school characteristics could be considered as rival alternative hypotheses to principal leadership in this study. Prior studies have controlled for select student characteristics and teacher demographics variables due to their potential effects on dependent variables that otherwise might have been attributed to the independent variable of focus (Hirsch, 2005a; Hirsch, 2007b; Johnson & Stevens, 2006; Rosenholtz & Simpson, 1990).

Student/school characteristics variables that are sometimes examined as potential covariates as they may explain variance in the dependent variable that would otherwise be attributed to the primary independent variable of focus within a study include: school size/student enrollment, student socio-economic status, and specific, student demographic characteristics within a school. Student enrollment at SPHS decreased by only five students from the 2007-08 to 2008-09 school year according to NC School Report Card data for SPHS. According to <http://www.dpi.state.nc.us/fbs/resources/data/>, students' socio-economic status as measured by students' qualification for free and reduced lunch at SPHS increased by only 2.7% from 23.6% to 26.3% from the 2007-08 school year to the 2008-09 school year. Due to the minimal change in student enrollment and in students' qualification for free and reduced lunch at SPHS from the 2007-08 to the 2008-09 school year, the variance in student academic performance on End-of-Course tests that could have been attributed to student/school characteristics variables was not examined in this study. It is important to note more specific, accurate, student demographic data for students at SPHS was not available to the researchers at the time of the research study. Student demographic data for the school district was accessible via <http://www.dpi.state.nc.us/fbs/resources/data>.

The researchers also considered controlling for the effects of teacher demographics on student academic achievement that might otherwise have been attributed to principal leadership. Based on the research findings of Hirsch (2005b) from his analysis of the 2004 NCTWCS, and the minimal changes in teacher demographic variables at SPHS from the 2007-08 to the 2008-09 school year, the variance in student academic achievement that could have been attributed to teacher demographic variables was not examined in this study. Teacher demographic variables where there was minimal change from the 2007-08 to the 2008-09 school year included: the percentage of fully-licensed teachers, classes taught by highly-qualified teachers, the percentage of teachers with advanced degrees, the number of teachers that had earned National Board Certification, and the teaching experience/number of years teaching of each teacher. NC School Report Cards defined a highly qualified teacher, "as one who has obtained full state teacher certification or has passed the state teacher licensing examination and holds a license to teach in the state".

One teacher demographic variable reported by NC School Report Cards that the researchers would like to examine as a potential extraneous variable in future studies is the teacher turnover rate at SPHS. The teacher turnover rate increased at SPHS from the 2007-08 to 2008-09 school year from 19% to 23%. If the

researchers expanded the study of principal leadership's effect on student academic achievement at SPHS while under the leadership of Principal A in 2007-08 and Principal B in 2008-09 to include the 2009-10 school year, the second year of Principal B's tenure, the teacher turnover rate would have to be examined more closely as a potential extraneous variable. The teacher turnover rate at SPHS fell from 23% in 2008-09 to 9% in 2009-10 in the second year of Principal B's tenure. However, due to the small change in teacher turnover from 2007-08 to 2008-09, the teacher turnover rate was not examined as a potential covariate in this study.

Data for 2008 NCTWCS and for the 2009 NCTWCS had to meet the 40% minimum response rate to be included in the 2008 NCTWCS data set. Descriptive statistics, including the school leadership domain subscale means, and the percentages of respondents selecting responses to each question, were calculated and analyzed for each school leadership domain question with the same Likert-scale responses. Frequency distributions were also calculated, converted to percentages, and analyzed for the 2009 NCTWCS for the 2008-09 school year. The percentages of students proficient on End-of-Course tests at SPHS during the 2007-08 and the 2008-09 school year were analyzed by the researchers to calculate changes in student proficiency on End-of-Course tests while SPHS was under the leadership of Principal A during the 2007-08 school year and Principal B during the 2008-09 school year. Grade level, achievement level III, and proficiency level are academic standards according to the ABC's of Education in North Carolina that constitute "student work that meets the achievement standard set by North Carolina." Students performing at grade level as indicated by scores of Achievement Level III or Achievement Level IV on end-of-grade tests are considered to be performing at grade level and at the proficiency level deemed necessary "to be well prepared to meet the demands of the next grade level" (North Carolina Report Cards).

Limitations

The opportunity to analyze the effects of principal leadership on student academic achievement at SPHS while under the leadership of two different principals far outweighed the limitations that were encountered while completing this study. The first limitation of this study was the limited sample from which data was gathered and analyzed to determine the effect of principal leadership on student academic achievement. SPHS was the only unit of analysis from which this study's sample of teachers and students were selected. The determining factor which limited the sample for this study was the fact that the NCTWCS is only administered every two years by LEARN NC. The unprecedented opportunity to re-administer the 2008 NCTWCS for the 2008-09 school year at SPHS through a collaborative venture with LEARN NC provided accessible data which allowed for an examination and comparison of Principal A and Principal B's leadership effect on student academic achievement at SPHS for consecutive years (2007-08 and 2008-09). The re-administration of the NCTWCS at SPHS marked the first time LEARN NC had granted such a request to a principal or superintendent since the inception of the NCTWCS in 2002. The limited sample might result in limited generalization of findings from this study to other studies examining the effect of principal leadership on student academic achievement in other school locations. School location refers to the area a school obtains the majority of its student enrollment. School location is often defined as urban, suburban, or rural areas. Despite the potential limited generalizability of the findings from the study to multiple school locations, the opportunity to conduct this study was unique given the accessibility of teacher working conditions data for a public North Carolina school for two consecutive years.

Several limitations of this study resulted from the unwillingness of LEARN NC to provide the researchers with an electronic data file which included teacher demographic data for the administration of the 2009 NCTWCS at SPHS. The 2008 NCTWCS included a teacher demographics section within the survey that included nine multiple choice questions for respondents to complete to obtain more information

about the sample for the 2008 NCTWCS. LEARN NC informed the researchers upon the request to re-administer the 2008 NCTWCS at SPHS for the 2008-09 school year that a complete, secondary data set for the 2009 NCTWCS would not be provided to the researchers due to supervisory relationship of one of the researchers conducting this study to the teacher sample at SPHS. Instead, LEARN NC agreed to provide the researchers with a frequency distribution of teacher responses for all non-teacher demographic questions within the 2009 NCTWCS. The inability to secure a complete secondary data set for the 2009 NCTWCS for SPHS did not allow the researchers to control for teacher demographic variables as Cooper (2008) was able to do in a prior study which examined the effect of grade configuration on teachers' perceptions of working conditions. Hence, the researchers could not measure the potential effect of teacher demographics on student academic achievement. Teacher demographic variables for the administration of 2008 NCTWCS during the 2007-08 school year were available to the researchers as teacher working conditions data from regular administrations of the NCTWCS every two years by LEARN NC are considered as public knowledge, available upon written request once the intended use of the complete NCTWCS data file is approved. As noted previously, the researchers' analysis of teacher demographics variable data obtained from the NC School Report Cards for SPHS for the 2007-08 and 2008-09 school years, nevertheless, revealed minimal change in numerous teacher demographic variables that might have been analyzed as covariates in this study.

The researchers also strongly considered a quantitative research design that could control for and measure the effects of student characteristics at SPHS on student academic achievement under the leadership of Principal A and Principal B. However, the researchers chose not to control for student characteristics as there was minimal change in student enrollment, student demographics by race, and by socio-economic status as measured by Federal Free and Reduced Lunch statistics at SPHS when comparing the student enrollments for the 2007-08 and 2008-09 school years.

Results

Student Academic Achievement

Students were more proficient on eight of the ten End-of-Course tests during the 2008-09 school year while SPHS was under the leadership of Principal B than in 2007-08 while under the leadership of Principal A. Student proficiency is also referred to as "at or above grade level" as stated on the NC School Report Card. Students were less proficient during the 2008-09 school year on the Algebra I and Physics End-of-Course tests. Student proficiency decreased by 3.4% on the Algebra I End-of-Course test from 2007-08 to 2008-09. Student proficiency decreased by at least 3%, but by no more than 8%, on the Physics End-of-Course test from 2007-08 to 2008-09. Students' proficiency on the Physics End-of-Course test was reported as greater than 95% for the 2007-08 school year. Student proficiency on the Physics End-of-Course test declined to 92% for the 2008-09 school year.

Student proficiency increased by over 10% on five of the eight End-of-Course tests with higher student proficiency for the 2008-09 school year while SPHS was under the leadership of Principal B than during the 2007-08 school year while SPHS was led by Principal A. The largest increase in student proficiency on an End-of-Course test from the 2007-08 to the 2008-09 school year was on the Chemistry End-of-Course test where there was an increase of 23.6% in student proficiency. The smallest increase in student proficiency on an End-of-Course test from the 2007-08 to the 2008-09 school year was on the Civic and Economics End-of-Course test where there was an increase of 5.4% in student proficiency.

Upon the arrival of Principal B at the beginning of the 2008-09 school year, a goal of 80% for student proficiency on all End-of-Course tests was set by the School Improvement Team at the recommendation of Principal B. Students achieved 80% proficiency for four of the ten End-of-Course tests

during the 2008-09 school year while under the leadership of Principal B. Students achieved 80% proficiency on one End-of-Course test (Physics) while under the leadership of Principal A during the 2007-08 school year. Students achieved at least 70% proficiency on seven of ten End-of-Course tests during the 2008-09 school year while under the leadership of Principal B. Students achieved 70% proficiency on three End-of-Course tests (Physics, Civics and Economics, and English I) while under the leadership of Principal A during the 2007-08 school year. Overall, the cumulative student proficiency (also referred to as a school's Composite Score according to the ABCs of Public Education for the state of North Carolina) on End-of-Course tests increased from 66% from the 2007-08 school year while under the leadership of Principal A to 71.5% for the 2008-09 school year while under the leadership of Principal B at SPHS. Student academic performance on End-of-Course tests at SPHS during the 2007-08 and 2008-09 school years is summarized in Table 1a and Table 1b.

Table 1a.
Student Academic Performance on End-of-Course Tests Comparison Chart

Suburban Public High School	English I	Algebra I	Algebra II	Geometry
Principal A 2007-08 School Year	72.0%	51.7%	55.7%	61.7%
Principal B 2008-09 School Year	82.6%	48.3%	63.1%	72.1%
Change in Student Proficiency from the 2007-08 to the 2008-09 School Year	+10.6%	-3.4%	+7.4%	+10.4%

NC School Report Card Data (2007-08 & 2008-09)

Student Proficiency Indicates the Percentage of Students Who Scored a 3 or 4 on End-of-Course Tests

Table 1b.
Student Academic Performance on End-of-Course Tests Comparison Chart

Suburban Public High School	Biology	Chemistry	Physical Science	Physics	Civics & Economics	U.S. History
Principal A 2007-08 School Year	67.4%	68.3%	55.1%	>95%	71.3%	66.3%
Principal B 2008-09 School Year	81.7%	91.9%	67.8%	92.0%	76.7%	75.0%
Change in Student Proficiency from the 2007-08 to the 2008-09 School Year	+14.3%	+23.6%	+12.7%	->3.0%	+5.4%	+8.7%

NC School Report Card Data (2007-08 & 2008-09)

Student Proficiency Indicates the Percentage of Students Who Scored a 3 or 4 on End-of-Course Tests

Student Academic Achievement by Student Group

Student academic achievement as measured by student proficiency on End-of-Course tests was measured for thirteen student groups at SPHS for the 2007-08 and 2008-09 school years. Students were grouped by gender, ethnicity, and other student characteristics variables. The thirteen student groups included: Male, Female, White, Black, Hispanic, American Indian, Asian Pacific Islander, Multi-racial, Economically Disadvantaged (E.D.), Not Economically Disadvantaged (N.E.D.), Limited English Proficiency (L.E.P.), Migrant Students, and Students with Disabilities. Student proficiency data by student group was obtained from the NC School Report Card for SPHS to analyze the change in student academic achievement for the 2007-08 school year while under the leadership of Principal A and for the 2008-09 school year while under the leadership of Principal B for all groups but Migrant Students. Migrant student data was unavailable as fewer than five students were classified as migrant students for the 2007-08 and the 2008-09 school years. The American Indian subgroup did not meet minimum membership qualifications for the 2008-09 school year. Thus, changes in American Indian subgroup student achievement could not be assessed for the two-year period of this study.

Student proficiency on End-of-Course tests increased for all student subgroups at SPHS from the 2007-08 school year while under the leadership of Principal A to the 2008-09 school year while under the leadership of Principal B. The largest increase in student proficiency was achieved by the Limited English Proficiency subgroup with an increase in student proficiency of 25%. Six of eleven subgroups had an increase in overall student proficiency by over 10%. All subgroups had an increase of at least 7% in student proficiency. The Male subgroup had the smallest increase in student proficiency from the 2007-08 to the 2008-09 school year with an increase of seven percent.

While under the leadership of Principal A during the 2007-08 school year, four of twelve subgroups achieved a student proficiency of over 70%. These groups included: White, American Indian, Asian Pacific Islander, and Non-Economically Disadvantaged. Of these four groups during the 2007-08 school year, the American Indian and Asian Pacific Islander subgroups were the only subgroups with a student proficiency of over 80%. Six of twelve subgroups during the 2007-08 school year reached student proficiency of 50% or less. Black, Hispanic, Multi-racial, Economically Disadvantaged, Limited English Proficiency, and Students with Disabilities subgroups reached a student proficiency level of 50% or less. Limited English Proficiency, Students with Disabilities, and Black subgroups achieved the lowest proficiency for the 2007-08 school year in ascending order.

While under the leadership of Principal B during the 2008-09 school year, five of eleven subgroups achieved a student proficiency of over 70%. These groups included: Male, Female, White, Asian Pacific Islander, and Non-Economically Disadvantaged. Of these five groups during the 2008-09 school year, the White and Asian Pacific Islander subgroups were the only subgroups with a student proficiency of over 80%. Two of eleven subgroups (Black and Students with Disabilities) during the 2008-09 school year reached student proficiency of 50% or less. Students with Disabilities, Black, and Limited English Proficiency subgroups achieved the lowest student proficiency for the 2008-09 school year in ascending order.

Teachers' Perceptions of School Leadership

Teacher working conditions domain subscale means were calculated for the school leadership domain for the 2008 and 2009 NCTWCS for SPHS. Domain subscale means were calculated for all questions within the school leadership domain with the same, Likert scale responses. A comparison of the school leadership domain subscale means for the 2007-08 school year while SPHS was under the leadership of Principal A, and for the 2008-09 school year while SPHS was under the leadership of Principal B were

calculated. School leadership domain subscale means were calculated using a five-point scale with one as the least positive (Strongly Disagree) and five as the most positive (Strongly Agree). Due to the focus of this research project on the effect of principal leadership on student academic achievement, a comparison and analysis of teachers' responses to each of the fourteen questions on school leadership with the same Likert scale responses will be presented along with the comparison of the school leadership domain subscale means for the 2008 and 2009 NCTWCS.

Based on the school leadership domain data from the 2008 and 2009 NCTWCSs, teachers reported greater satisfaction with the principal leadership of Principal B at SPHS during the 2008-09 school year than the leadership of Principal A during the 2007-08 school year. Teachers' perceptions of the principal leadership according to the school leadership domain increased by 1.17 points under the leadership of Principal A during the 2007-08 school year (3.11) to the leadership of Principal B during the 2008-09 school year (4.28).

School Leadership Domain Question Analysis

A more comprehensive analysis of teachers' perceptions of the school leadership domain according to secondary data from the 2008 NCTWCS, and primary data from the 2009 NCTWCS for SPHS was conducted by the researchers. The purpose of analyzing teachers' perceptions of the school leadership domain for each question included in the calculation of the school leadership domain subscale mean for the 2007-08 and 2008-09 school years was based on the fact that the school leadership domain provides specific data on teachers' perceptions of the leadership of Principal A and Principal B at SPHS for the 2007-08 and 2008-09 school years. For each of the fourteen school leadership domain questions, the Likert scale responses of Strongly Disagree and Somewhat Disagree, as well as Somewhat Agree and Strongly Agree, were combined to produce a cumulative percentage of Disagree and Agree as an indication of teachers' perceptions of the principal leadership of Principal A during the 2007-08 school year, and of Principal B during the 2008-09 school year. Even though the fourteen questions within the school leadership domain do not specifically ask teachers to rate their perceptions of the "principal leadership" at their school, it is clear in at least nine of the fourteen questions the school leadership factor being measured is directly attributable to principal leadership. Five of the nine questions (5.1c, 5.1d, 5.1e, 5.1f, and 5.1h) which measure teachers' perceptions of principal leadership begin with the statement, "The school leadership". Four additional questions (5.1k, 5.1l, 5.1m, and 5.1n) measure teachers' perceptions of the school leadership's role in holding teachers to high professional standards, in conducting teacher evaluations, and in providing teachers feedback on instruction clearly measure teachers' perceptions of the principal leadership at their school. Four additional questions within the school leadership domain (5.1a, 5.1g, 5.1i, and 5.1j) measure school leadership factors that are most often associated with principal leadership. These four questions measure teachers' perceptions of school leadership's ability to develop an atmosphere of trust and respect in the school, to involve community members in the activities of the school, to establish an effective school improvement team, and to establish a shared vision in the school. A final school leadership domain question (5.1b) was determined by the researchers to be a better fit for the teacher leadership domain rather than the school leadership domain for the purposes of this study. Question 5.1b measures the faculty's commitment to student learning, not the school leadership's, or the principal's commitment to student learning. Question 5.1b is included in the calculation of the school leadership domain subscale mean. However, question 5.1b will not be analyzed by the researchers in the comprehensive analysis of teachers' perceptions of the school leadership domain. The researchers will focus on the thirteen questions within the school leadership domain that most clearly measure teachers' perceptions of the school leadership domain and hence, the effect of principal leadership on teachers' perceptions of working conditions at SPHS.

Teachers “Somewhat Agreed/Strongly Agreed” at a rate greater than 70% for three of the thirteen School Leadership questions for the 2007-08 school year while under the leadership of Principal A. These three questions, 5.1k, 5.1l, and 5.1m, focused on the principal’s role in holding teachers to high professional standards and in conducting teacher evaluations fairly and consistently. Teachers “Somewhat Agreed/Agreed” at a rate of 50% or less for eight of the thirteen school leadership questions for the 2007-08 school year while under the leadership of Principal A. The school leadership question with the lowest percentage of teachers responding with a “Somewhat Agree/Strongly Agree” response (5.1e) measured teachers’ perceptions of how effectively school leadership enforced rules for student conduct. The school leadership question with the third lowest percentage of teachers choosing the “Somewhat Agree/Strongly Agree” response (5.1f) also measured teachers’ perceptions of how school leadership maintained discipline within SPHS.

Teachers chose the “Somewhat Agree/Strongly Agree” responses at a rate greater than 70% for twelve of the thirteen school leadership questions for the 2008-09 school year while under the leadership of Principal B. Teachers responded with “Somewhat Agree/Strongly Agree” at a rate greater than 90% for five of the twelve school leadership domain questions. These five questions (5.1c, 5.1d, 5.1e, 5.1f, and 5.1k) were designed to measure teachers’ perceptions of the school leadership’s ability to communicate clearly with students, teachers, and parents, to shield teachers from disruptions, enforce rules, maintain student conduct, and hold teachers to high professional standards. At least 88% of respondents selected “Somewhat Agree/Strongly Agree” for three additional questions (5.1a, 5.1h, and 5.1i). These three questions measured teachers’ perceptions of the school leadership’s ability to maintain an atmosphere of trust, support teachers, and handle teacher evaluations in an appropriate manner. The fewest number of teachers selected “Somewhat Agree/Strongly Agree” for Question 5.1i which measured teachers’ perceptions of how effectively the school improvement team provides leadership. Question 5.1i was also the only school leadership question in which teachers selected “Somewhat Agree/Strongly Agree” in less than 70% of responses for the 2008-09 school year.

The percentage of teachers that responded with a “Somewhat Agree/Strongly Agree” response increased for all thirteen questions within the school leadership domain included in this study during the 2008-09 school year while under the leadership of Principal B compared to the 2007-08 school year when SPHS was led by Principal A. The school leadership domain question with the largest increase in the percentage of teachers who chose “Somewhat Agree/Strongly Agree” as their response when comparing the leadership of Principal A in 2007-08 to Principal B in 2008-09 was question 5.1e which measured the enforcement of school rules at SPHS. Seventy-nine percent more teachers agreed during the 2008-09 school year that Principal B effectively enforced school rules when compared to teachers’ perceptions of Principal A during the 2007-08 school year. Sixty-five percent more teachers agreed during the 2008-09 school year that Principal B maintained discipline and student conduct when compared to teachers’ perceptions of Principal A during the 2007-08 school year. There was at least a forty percent increase in the percentage of teachers that agreed with factors related to the leadership of Principal B during the 2008-09 school year for six questions within the school leadership domain when compared to the leadership of Principal A during the 2007-08 school year. The smallest change in the percentage of teachers that agreed with factors related to the leadership of Principal B during the 2008-09 school year when compared to the leadership of Principal A during the 2007-08 school year was 4% for question 5.1l which measured teachers’ perceptions of school leadership’s consistent handling of teacher evaluations. Table 3 summarizes teachers’ perceptions of the school leadership domain questions for SPHS while under the leadership of Principal A during the 2007-08 school year and while under the leadership of principal B during the 2008-09 school year.

Summary of Results

Students were more proficient on eight of the ten End-of-Course tests during the 2008-09 school year while SPHS was under the leadership of Principal B than in the 2007-08 school year while under the leadership of Principal A. Student proficiency on End-of-Course tests increased for all student subgroups at SPHS from the 2007-08 school year while under the leadership of Principal A to the 2008-09 school year while under the leadership of Principal B.

Teachers rated the school leadership of Principal B during the 2008-09 school year 1.17 points higher on a five-point scale than the school leadership of Principal A during the 2007-08 school year. The percentage of teachers that responded with a “Somewhat Agree/Strongly Agree” response increased for all thirteen questions within the school leadership domain included in this study while under the leadership of Principal B during the 2008-09 school year than in the 2007-08 school year while under the leadership of Principal A.

Comprehensive Analysis of Principal B’s Effect on Student Academic Achievement

The student academic achievement and teachers’ perceptions of school leadership data revealed a more positive leadership effect for Principal B during the 2008-09 school year than the leadership of Principal A during the 2007-08 school year at SPHS. The researchers used their access within SPHS as a participant-observer to explore the reasons why the leadership of Principal B had a greater effect on student academic achievement beyond what we have learned from student End-of-Course test performance in 2008-09 and teachers’ perceptions of school leadership according to the 2009 NCTWCS. A more comprehensive, participant-observer analysis of the leadership of Principal B revealed several academic programs and initiatives that were either introduced, supported, or improved at SPHS during the 2008-09 school year. Academic programs introduced, supported, or improved at SPHS by Principal B during the 2008-09 school year included: a 1-to-1 laptop initiative with wireless network; partnerships between the Math Department and one local, state university, and one nationally-recognized university in an effort to improve student Algebra proficiency (a course with a history of low student academic achievement); continued revision and implementation of Advancement Via Individual Determination (AVID) concepts and curriculum (a program to promote first-generation, four-year college attendance); increases honors and AP course offerings; partnership with a local community college to offer new Career and Technology (CTE) classes and to save CTE classes cut at SPHS due to budget cuts; implementation of a new SAT Prep Class; implementation of a four-year graduation pledge program in an attempt to lower the drop-out rate and improve the four-year graduation rate; implementation of a Senior/Freshmen Peer Mentor Program; and an increased emphasis on searching for grant funding and writing to apply for instructional funding to supplement current instructional funding or to replace lost instructional funding due to local and state educational funding cuts. As a result of the leadership of Principal B at SPHS beginning in the fall of the 2008-09 school year, student academic achievement as indicated by the Composite score on End-of-Course tests for SPHS students has improved as follows: 66% at the beginning of Principal B’s arrival at SPHS after the 2007-08 school year; 75.3% at the end of the 2008-09 school year; 83.2% at the end of the 2009-10 school year; to 84.3% at the end of the 2010-11 school year. Additional academic indicators which support the effect of Principal B’s leadership on student academic achievement at SPHS include: SAT scores above the district, state, and national averages; state writing and CTE Post Assessment Scores above the state proficiency averages; and SPHS met Adequate Yearly Progress for the first time in the school’s history during the 2010-11 school year.

Comprehensive Analysis of B's Effect on Teachers' Perceptions of School Leadership

Principal B introduced and implemented several changes at SPHS that had a positive effect on teachers' perceptions of school leadership based on the 2009 NCTWCS data upon his/her arrival for the 2008-09 school year. Principal B established an open-door communication policy where the principal and other administrators at SPHS were accessible to teachers and staff members on a daily basis. Principal B and the assistant principals were visible in the hallways during class changes, before school, after school, and during lunch transitions. The location of Principal B and the assistant principals throughout each school day was also communicated via email to teachers and staff so that they were aware of the days and times Principal B and the assistant principals were off campus or available for collaboration. Principal B and the assistant principals established and communicated daily routines that allowed teachers to know when administrators would likely be in their offices for collaboration. Principal B and the assistant principals responded to teachers' emails and voice mails in a timely manner, often meeting with teachers in person in their classrooms instead of responding via email. Finally, Principal B and the assistant principals were always accessible via two-way radio when around campus so they were immediately available when needed. These were major changes from the previous year when Principal A was often absent from campus or behind closed doors and unavailable for principal-faculty collaboration.

A second organizational change implemented by Principal B during the 2008-09 school year that may have led to more positive teachers' perceptions of the school leadership at SPHS was the implementation of school-level and department-level Professional Learning Communities (PLCs) where administrators and staff members could effectively collaborate and make data-driven instructional decisions. PLC professional development was integrated into monthly faculty meetings and quarterly student early-release days during the first month of Principal B's tenure at SPHS. Principal B continued to emphasize the importance of PLC professional development and the development of efficient, data-driven PLC's throughout the 2008-09 school year.

A third change implemented by Principal B that may have led to more positive teachers' perceptions of the school leadership at SPHS during the 2008-09 school year was the removal of many assigned duties from teachers before, throughout, and after the school day. Starting in the 2008-09 school year, teachers no longer had break or cafeteria duties. In fact, student break was removed entirely from the daily schedule due to major discipline problems during this time period the previous school year while SPHS was under the leadership of Principal A. Lunch supervision, previously shared by teachers on a rotating basis prior to Principal B's arrival, henceforth was provided by the school administrators and the School Resource Officer (SRO). Teachers were also were empowered to develop schedules for before-school and after-school hallway and area supervision. Administrators approved the schedules, but the teachers within their department PLCs developed assignment schedules and plans for their assigned area supervision duties.

Finally, Principal B approved the administration of the 2009 NCTWCS along with teacher, student, and parent school climate surveys to measure teachers' perceptions of teacher working conditions and teachers', students' and parents' perceptions of the school climate on a yearly basis. Based on the results of the 2009 NCTWCS, the implementations of Principal B, which in essence were defining characteristics of Principal B's leadership, had a positive effect on teachers' perceptions of the school leadership at SPHS during the 2008-09 school year and beyond.

Implications for Implementation and Further Research

The researcher will now present the implications of the study and suggest questions and lines of inquiry for future research. Student academic achievement results from this study indicated that Principal B's leadership had a greater effect on student academic achievement for eight of the ten state-mandated End-

of-Course tests during the 2008-09 school year than the leadership of Principal A during the 2007-08 school year. While there are many factors that influence student academic achievement at a school, the following variables would be worth considering as well by principals, superintendents, K-12 educational leaders, and higher education instructors who prepare future middle and secondary principals when examining principal leadership's effect on student academic achievement.

First, states and large school districts that administer TWCS's (Teacher Working Conditions Surveys) should conduct TWCSs annually to measure the effect of principal leadership on student academic achievement at a school. Due to fiscal limitations, the states and large school districts only conduct the TWCSs on a biennial basis if this frequently at this time. However, in the state of North Carolina this could change as funding for the biennial administration of the NCTWCS was cut by over \$300,000 in the most recent budget passed by the North Carolina General Assembly for the 2023-13 fiscal year. Findings from this study indicate the importance of measuring the effect of principal leadership on student academic achievement at a school annually. The results from this study and prior studies (Hirsch, 2005a; Hirsch, Emerick, with Church & Fuller, 2006a; Hirsch, Emerick, with Church & Fuller, 2006b; Hirsch, Emerick, with Church & Fuller, 2006c; Hirsch, Emerick, with Church & Fuller, 2007; Hirsch, 2009; Southeast Center for Teaching Quality) support the annual administration of TWCSs to measure the effect of principal leadership on student academic achievement.

Second, principal professional growth and evaluation models need to incorporate TWCS data in the holistic evaluation of principal leadership. Professional growth and evaluation models for principals should continue to incorporate TWCS data in the formative evaluations of principals by central office administrators and superintendents in states that conduct TWCSs on a regular basis as a means of assessing the effect of principal leadership on student academic achievement in their public schools. Principal leadership standards in states conducting TWCSs should communicate the expectation that principals use TWCS data to design their personal professional development and with the understanding that TWCS data will be used to assess the overall effectiveness of their principal leadership in principal evaluations. Principal evaluation instruments for the state of North Carolina currently integrate NCTWCS data in the evaluation of public school principals.

Third, longitudinal studies on the effect of principal leadership on student academic achievement at a school need to be conducted. Assessing principal leadership at a school based on one year of student academic achievement data does not provide a holistic, longitudinal assessment of the effect of principal leadership at a school. More comprehensive studies of principal leadership at a school over a period of years, possibly over a three to five-year period of a principal's leadership at a school, need to be conducted to measure the effect of a principal's leadership at a school from his/her arrival to the time of his/her departure. Longitudinal studies of a principal's leadership at a school would allow for an examination of the variance attributed to covariates to be assessed. Furthermore, longitudinal studies of the effect of principal leadership would provide access to greater amounts of student academic achievement and school leadership data that could be used in measuring the effects of principal leadership on student academic achievement. However, an ever-present limitation for longitudinal studies examining the effect of principal leadership at a school is the limited tenure of principals at a given school. Opportunities for longitudinal studies of principal leadership at a school would certainly be limited as principals are continuously seeking opportunities for career advancement through new principal leadership and educational leadership opportunities.

Fourth, longitudinal studies might eliminate or explain potential alternative rival hypotheses that challenge the variance in student academic achievement attributed to principal leadership. Longitudinal studies might also eliminate potential alternative rival hypotheses that appear in the examination of the

effect of principal leadership on student academic achievement at a school. For example, a potential alternative rival hypothesis to the effect of Principal B's leadership on student academic achievement at SPHS could be, if true, the ineffective organizational and instructional leadership of Principal A during his/her tenure as the principal of SPHS. A longitudinal study would analyze the effect of the principal leadership of Principal A at SPHS for the 2007-08 school year and for previous years. A longitudinal study of Principal A's leadership at SPHS, as well as a longitudinal study of Principal B's leadership at SPHS, might validate the findings of this study which support the positive effect of Principal B's organizational and instructional leadership on student academic achievement at SPHS.

Fifth, a follow-up study should explore the effect of the continuous change in superintendent leadership on student academic achievement for the school district SPHS is located. The continuous change in the superintendent leadership is another potential alternative rival hypothesis that could explain a portion of the variance in student academic achievement at SPHS that is attributed to the leadership of Principal B in this study. The school district SPHS is located within was led by two full-time superintendents, an interim superintendent, and two interim co-superintendents during the 2007-08 school year. The continuous change in superintendent leadership for the school district SPHS is located could have negatively affected student academic achievement that are attributed to the leadership of Principal A based on the findings from this study.

Sixth, future studies should examine the effect of teacher turnover on student academic achievement at SPHS. Teacher turnover is another potential alternative rival hypothesis that might have explained a portion of the variance in student academic achievement attributed to the leadership of Principal A and Principal B at SPHS during the 2007-08 and 2008-09 school years. Even though the teacher turnover rates are very similar for the 2007-08 and 2008-09 school years at SPHS, the quality of teachers that departed and were hired at SPHS for the 2007-08 and 2008-09 school years may have affected the student academic achievement. Likewise, future research studies should explore the subject areas where teacher turnover was most prevalent and examine the change in student academic achievement as a result of department teacher turnover. The quality of instruction offered by new teachers to SPHS during the 2007-08 and 2008-09 school years could explain the variance in student academic achievement that is attributed to the leadership of Principal A and Principal B in this study.

Finally, future studies should conduct a more complex statistical analysis of principal leadership's effect on student academic achievement. Creating a data file which includes and potentially merges student academic achievement with teacher demographic and student/school characteristics variables into one larger file would allow for an examination of the effects of covariates on student academic achievement that might otherwise be attributed to principal leadership. Quantitative statistical analyses such as ANCOVAs or Ordinary Least Squares (OLS) could be calculated to determine the amount of variance in student academic achievement that should be attributed to covariates and not principal leadership. Unfortunately, a complex quantitative analysis of student academic achievement could not be completed for this research study due to the supervisory relationship of one of the researchers to survey respondents at SPHS and out of the necessity to protect the confidentiality of survey respondents.

Conclusion

Based on the quantitative analysis of student academic achievement and school leadership domain data for SPHS while under the leadership of Principal A during the 2007-08 school year, and Principal B during the 2008-09 school year, the findings from this research study support the major research hypothesis that Principal B's leadership had a greater effect on student academic achievement during the 2008-09 school year than the leadership of Principal A at SPHS during the 2007-08 school year.

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