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EXPLORING THE DIRECT AND INDIRECT EFFECTS OF SCHOOL LEADERSHIP ON STUDENT ACHIEVEMENT IN KENTUCKY HIGH SCHOOLS

A Dissertation
Presented to
The Faculty of the Educational Leadership Doctoral Program
Western Kentucky University
Bowling Green, Kentucky

In Partial Fulfillment
Of the Requirements for the Degree
Doctor of Education

By
Sheri Roberts McGuffin

August 2011

EXPLORING THE DIRECT AND INDIRECT EFFECTS OF
SCHOOL LEADERSHIP ON STUDENT ACHIEVEMENT
IN KENTUCKY HIGH SCHOOLS

Date Recommended: August 08, 2011

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Dr. Hope Marchionda

6-Sept-2011

Dean, Graduate Studies and Research Date

I dedicate this journey to those special people in my life who have been such an incredible support throughout the process. First, to my husband and children, I could not have finished my courses or my dissertation without your undying support and encouragement. Barry, you've always been a backbone of support in my educational endeavors, and now I hope to be your support as you start seminary in the fall. Brit and Ian, your words of encouragement and saying, "I'm proud of you, Mom," mean more than you will ever know. Tristan and Connor, I am looking forward to being able to take more road trips and scheduling adventures with you and cooking more often so we can give those Ramen noodles a break.

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To Dr. Casper: I have very much enjoyed working with you in the Nelson County School System over the years. You have helped to push our system to aspire to a level of rigor that it has needed for many years. Thank you for allowing me to share ideas with you and for being open to answering questions that I have had along the way.

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IN KENTUCKY HIGH SCHOOLS

Sheri Roberts McGuffin August 2011 105 Pages
Directed by: Christopher Wagner, Jay Fiene, John Casper, and Hope Marchionda
Educational Leadership Doctoral Program Western Kentucky University

With the inception of No Child Left Behind and the national push for standards-based evaluation of student achievement, educational leaders in the United States have been held to a higher level of accountability than ever before for student achievement in their schools. Despite the growing push for accountability in school leadership, research has exhibited limited statistical support to link school leadership directly to student achievement with findings that were either weak or confounded by mixed results. Furthermore, school culture, teacher efficacy, and socioeconomic status have been found to have direct effects upon student achievement with teacher efficacy having additional mediating effects upon student achievement through school leadership. These findings suggest support for an indirect effect of school leadership upon student achievement.

The purpose of this study was 1) to examine the relationship between high school principals' leadership style, school culture, teacher efficacy and student achievement, and 2) to determine the degree that school culture, teacher efficacy, and socioeconomic status accounted for variance in the relationship between leadership style and student achievement. Participants in the study included principals (N=13) and teachers (N=239) from randomly selected public high schools in Kentucky. Participants completed online questionnaires measuring leadership style, school culture, and teacher efficacy. The

principals provided information regarding their school's socioeconomic status by reporting the approximate percentage of students who received free or reduced lunch. Student achievement was measured by the difference in each school's transition index score from 2009 to 2010 as calculated by the Kentucky Department of Education.

Analyses from the study indicated that behaviors and attributes of transformational leadership were not related to school culture in this population, and none of the behaviors and attributes of a particular leadership style was related to teacher efficacy. Following the trend of mixed results in the relationship between leadership style and student achievement, transformational leadership was associated with a decrease in student achievement while transactional leadership and passive/avoidant leadership exhibited non-significant effects upon student achievement.

In contrast, school culture had a statistically significant impact upon student achievement, and when school culture and leadership style were both entered into a multiple regression, the combination of the two factors accounted for 65.4% of variance in the relationship to student achievement with teacher efficacy found to be a potential mediator in the relationship. Path analysis supported the theory of teacher efficacy as a mediator between transformational leadership style and student achievement through more positive school culture.

Results from the study have indicated that leadership style alone has produced a mixed picture in its relationship to student achievement, but school culture has a significant, direct impact upon student achievement. Furthermore, the combination of a more positive school culture and greater levels of teacher efficacy can have a significant

impact upon student achievement when school leaders have strong, transformational leadership characteristics.

CHAPTER I: INTRODUCTION

Background

Good or bad leadership has the potential to make a company, business, school or organization either successful or unsuccessful. For example, when Microsoft was formed in the late 1970's, Bill Gates' leadership through implementation of novel ideas in technology shaped a company that shifted the way the global community learned, communicated and, ultimately, worked. Had Bill Gates been a follower instead of a challenger of the status quo, the typewriter could still be the tool of choice for word processing with laptops as only figments of the imagination.

Leadership in education has been incredibly important in shaping of America's past, present, future. School leaders have worn many hats over the years but none probably more important than in today's environment of No Child Left Behind (NCLB). With the inception of NCLB and the national push for standards-based evaluation of student achievement, educational leaders in the United States have been held to a higher level of accountability than ever before for student achievement in their schools.

Despite the need for strong leaders in the public schools, the research examining leadership qualities in public school administrators has been weak with few studies tying leadership style specifically to student outcome. So, even though leadership would seem to affect student achievement and principals in public schools are held accountable for the academic successes or failures of their schools' students, the question is "Does leadership really affect student achievement?"

Observational evidence has historically exhibited that strong leadership within a school often enhances the school's students' opportunities to succeed, both personally and academically; however, traditional research methods have found limited statistical

support to link school leadership directly to student achievement with findings that were either weak or confounded by other variables (Kaplan, Owings, & Nunnery, 2005; Suskavcevic & Blake, 2004). Furthermore, school culture and teacher efficacy have been found to have mediating effects upon student achievement through school leadership (Bulris, 2009; Ross & Gray, 2006a). These findings suggest support for the indirect effect of school leadership upon student achievement.

Significance of the Study

Kentucky's Commonwealth Ability Testing System (CATS) was designed to improve teaching quality and student learning utilizing a multi-modal system of data collection including the Kentucky Core Content Test (KCCT), evaluation of writing skills through on-demand prompts and writings portfolios, ACT scores and alternative assessments for students with disabilities (Kentucky Department of Education, 2009). The Kentucky Board of Education has utilized a Long-Term Accountability model, which examines school data over a period of time, to determine levels of sustained improvement, stagnation or decline. Kentucky's Senate Bill 1 (Kentucky Legislature, 2009) strengthened this model to combine Kentucky's accountability model with national accountability from the No Child Left Behind of 2001 and college readiness standards. If a school has not met national standards at the end of a cycle of evaluation, the school and district are audited by the state. Neither the school nor the administrator is sanctioned or penalized based upon in-decline status; however, the results are made available to the public through multiple modes of media and, if the school does not improve, the administrator may be transferred to another position within the district or closely scrutinized until desired improvements occur (Chaika, 2006). The significance of the

problem for Kentucky administrators, teachers and students has been that a system of accountability has existed without its stakeholders knowing the research-based targets specifically linked to improvement. Some research has been conducted to explore correlates of student achievement in Kentucky's elementary and middle schools (Hayes, 2007; Kerley, 2004; Ross, 1998; Shutt, 2004); however, no research to date has explored how the constructs have worked together in Kentucky's high schools. In fact, no research to date has explored these constructs in conjunction with one another in a secondary school population.

Problem Statement

With the lack of clarity in the relationship between leadership and student performance in secondary schools, researchers must be creative in how they examine the dynamics between the constructs. Research has demonstrated the effects between school leadership and school culture (Bulris, 2009; Campo, 1993; Gruenert, 2005), school leadership and its effects upon its teacher's self-efficacy (Hipp & Bredeson, 1995; Nir & Kranot, 2006), and has demonstrated the effect between a school's level of achievement and socioeconomic status (Hirth & Mitchell, 1995; Opkala, Smith, Jones, & Ellis, 2000; Wooderson-Perzan & Lunenberg, 2001; Yap, 1997). Research has also indicated that collective teacher efficacy has served as a mediator between the relationship between school leadership and student achievement in elementary populations (Ross & Gray, 2006a). The problem for the current study was to determine how the constructs were directly and indirectly related in high school populations.

Research Questions

To answer the question about the nature of the relationship between school leadership and student achievement, the current study has examined the five constructs – school leadership, school culture, teacher efficacy, socioeconomic status, and student achievement -- in relationship to one another through the following questions:

Research Question #1: To what degree is leadership style related to school culture, teacher efficacy, and student achievement?

Research Question #2: To what degree do school culture, teacher efficacy, and socioeconomic status account for variance in the relationship between leadership style and student achievement?

Definitions

Affilliative collegiality: One of the subscales on the School Culture Triage Inventory that indicates how well school employees work together, support one another, and feel valued and included (Wagner, 2006).

Augmentation effect: The belief that transformational leaders can enact through a transactional leadership style by encouraging others to enact their own leadership behaviors (Avolio & Bass, 1991).

Collective teacher efficacy: A school's overall belief system that describes how its teachers as a collective define and enhance a school's culture (Kurtz & Knight, 2003).

Efficacy/self-determination: One of the subscales on the School Triage Inventory that indicates how employees see themselves and rate their value within the school culture (Wagner, 2006).

Mediator: A variable in a dependence-independence model that accounts for the relationship between the independent and dependent variable (Baron & Kenny, 1986).

No Child Left Behind Act of 2001 (NCLB, 2002): A piece of United States legislation designed to increase schools' and teachers' levels of accountability through expectation of improvement upon annual tests in reading and mathematics. It was passed by Congress in 2001 and then signed by then President George W. Bush in January of 2002.

Path analysis: A form of structural equation modeling (SEM) used to describe a directed path of dependence among a set of variables.

Professional collaboration: One of the subscales on the School Culture Triage Inventory that describes how teachers and school staff work together to solve problems within the organization (Wagner, 2006).

School climate: How effective the school functions including the physical environment, the social environment, and expectations of student behavior and outcome (Creemers & Reezigt, 1999).

School culture: Based upon a common set of beliefs, attitudes, and behaviors which characterize a school, school culture is "the shared experiences both in a school and out of a school (traditions and celebrations) that create a sense of community, family, and team membership" (Wagner, 2006, p. 41).

Senate Bill 1 (Kentucky Legislature, 2009): A piece of Kentucky legislature that was written to improve the accountability model of the Commonwealth Accountability Testing System (CATS) through integration of national standards, college readiness expectations, and requirements from The No Child Left Behind Act of 2001.

Structural equation modeling (SEM) A statistical technique for exploring and confirming causality in a set of hypothetically related variables. The technique is usually based upon a proposed model of related independent and dependent variables.

Transactional leadership: The type of leadership focused upon day-to-day operations of an organization and ensuring implementation of following rules and procedures. Transactional leadership often motivate through contingencies or rewards (Burns, 1978). Bass and Avolio (1994) described three forms of transactional leadership: management-by-exception-passive, management-by-exception-active and constructive-transactional.

Transformational leadership: The type of leadership described as enacting change within an organization through changes in the perception of organizational values and achievement (Burns, 1978). Transformational leaders can be categorized by four factors: individual consideration, intellectual stimulation, inspirational motivation, and idealized influence.

CHAPTER II: LITERATURE REVIEW

Introduction

The purpose of the study was 1) to examine the relationship between leadership style, school culture, teacher efficacy and student achievement and 2) to determine to what degree school culture, collective teacher efficacy and socioeconomic status account for variance in the relationship between leadership style and student achievement. The structure of this chapter has included an overview of the current administrator expectations for accountability in the state of Kentucky and across the United States, with regards to student achievement (the dependent variable), a description of the theoretical model used to generate the study's variables of interest and a summary of the literature that describes each independent variable (leadership style, school culture, teacher efficacy, and socioeconomic status), in the context of its relationship to student achievement.

Administrator Accountability in Student Achievement

With the inception of No Child Left Behind in 2001 and the national push for standards-based evaluation of student achievement, K-12 administrators in the United States have been held to a higher level of accountability for student achievement in their schools. Some school districts in the United States have even gone as far as to base negative evaluation and continuing employment of their principals upon their schools' performance (Gendar, 1999; Vogell, 2009) making test scores the "single biggest career-maker – or breaker – in the wake of the federal No Child Left Behind Act" (Vogell, 2009, p. 1).

Kentucky's Commonwealth Ability Testing System (CATS) was designed to improve teaching quality and student learning utilizing a multi-modal system of data collection including the Kentucky Core Content Test, evaluation of writing skills through on-demand prompts, writing portfolios, ACT scores and alternative assessments for students with disabilities (Kentucky Department of Education, 2009). The Kentucky Board of Education has utilized a long-term accountability model, which examines school data over a period of time, to determine levels of sustained improvement, stagnation or decline. The No Child Left Behind Act of 2001 reinforced Kentucky's model with specific accountability measures in Reading and Mathematics, prompting Kentucky's legislature to respond with Senate Bill 1 in 2009 that modified assessment and accountability to include school and district audits in addition to specific consequences for schools that failed to meet national benchmarks. These included

1) An audit to determine the appropriateness of a school's or district's classification and to recommend needed assistance;
2) School and district improvement plans;
3) Eligibility to receive Commonwealth school improvement funds
4) Education assistance from the Highly Skilled Educator (HSE) Program
5) Evaluation of school personnel; and
6) Student transfer to successful schools.

Neither the school nor the administrator is sanctioned or penalized based upon in-decline status; however, the results are made available to the public through multiple modes of media and, if the school does not improve, the administrator may be transferred to another position within the district or closely scrutinized until desired improvements occur (Chaika, 2006).

Observational evidence has historically exhibited that strong leadership within a school often enhances the school's students' opportunities to succeed, both personally and academically; however, traditional research methods have found limited statistical support to link school leadership directly to student achievement with findings that were either weak or confounded by other variables. For example, a mean comparison study examining the differences between principal quality and student achievement found that principals who were rated higher on standards-based evaluation questionnaires by their superiors had higher average scores on state student achievement tests than those principals who were rated lower (Kaplan, et al., 2005). This study's researchers took the Interstate School Leaders Licensure Consortium (ISLLC) standards ratings by superintendents of 160 principals from a random sample in Virginia. The behavior ratings of principals were factor analyzed by standard and then categorized into quartiles by composite scores. The researchers then used one-way analysis of variance and repeated measures, controlling for socioeconomic status as measured by the percentage of students within a school eligible for free/reduced lunch to determine any significant differences in overall student achievement by quartile. The main effects of student achievement by principal rating quartile were found to be significant in the upper three quartiles but only after accounting for socioeconomic status.

Furthermore, findings from subject-specific research has weakly linked instructional and non-instructional leadership as defined by a principal's total number of hours dedicated to leadership activities to math and science test scores (Suskavcevic & Blake, 2004). In this study, the researchers randomly selected 240 schools with two classes from each school and used principals' responses on the School Background

Questionnaire as the independent variable of instructional leadership and student scores from the achievement tests in science and math form the TIMSS 1999 study as the dependent variable of student achievement. The researchers used three of the School Background Questionnaire items as the moderating variable of collaboration and cooperation among teachers. The researchers found no significant relationships between instructional or non-instructional leadership and scores on the math or science tests; however, when collaboration and cooperation among teachers was added, the relationship was stronger Collaboration and cooperation have been found to be integral characteristics that make up a school's culture (Gruenert, 2005; Wagner & Masden-Copas, 2002; Campo, 1993); thus, these findings suggest other contributions such as school culture may strengthen the association between leadership and student achievement.

Despite the lack of findings that support a direct tie between school leadership and student achievement, reviews of multiple studies have provided an alternative means of examining the components that make a school leader effective. Cotton (2003), in her text *Principals and Student Achievement: What the Research Says*, asked, "Is the influence of principals on students direct or is it primarily indirect – mediated through other variables, most notably teacher behavior?" (p. 3). Using the results from a narrative analysis of 81 studies, she presented 26 traits and behaviors of successful principals including the following:

1) Maintains a safe and orderly school environment
2) Establishes vision and goals based on high levels of student learning
3) Sets high expectations for student learning

4) Exhibits self-confidence, responsibility and perseverance

5) Has visibility and accessibility

6) Establishes a positive, supportive school climate

7) Maintains emotional and interpersonal support

8) Integrates parental and community involvement

9) Respects rituals and ceremonies

10) Practices shared leadership and decision-making

11) Collaborates with others

12) Values instructional leadership

13) Pursues high levels of student learning

14) Expects continuous improvement

15) Discusses instructional issues

16) Provides observation and meaningful feedback to teachers

17) Supports teacher autonomy

18) Supports risk-taking

19) Offers professional development opportunities

20) Protects instructional time

21) Monitors student progress

22) Evaluates student progress data

23) Recognizes student and staff achievement

24) Serves as a role model

25) Avoids authoritative language

26) Minimizes organizational maintenance

Cotton's 26 traits and behaviors provided a host of individual leader characteristics, each of which has had the potential to provide a tie between a school leader and student achievement.

Using a quantitative meta-analysis, Marzano, Waters and McNulty (2005) examined 69 studies that yielded 21 characteristics of leader behaviors, referred to as "responsibilities" (p. 41). These 21 characteristics were very similar in description to Cotton's 26 traits and behaviors but provided more specific insight into the nature of a principal's role as a leader through the correlational results of statistical analysis. The 21 responsibilities identified were

1) Affirmation
2) Change agent
3) Contingent rewards
4) Communication
5) Culture
6) Discipline
7) Flexibility
8) Focus
9) Ideals/beliefs
10) Input
11) Intellectual stimulation
12) Involvement in curriculum, instruction, and assessment
13) Knowledge of curriculum, instruction and assessment
14) Monitoring/evaluating

15) Optimizer

16) Order

17) Outreach

18) Relationships

19) Resources

20) Situational awareness

21) Visibility

The combination of Cotton's (2003) narrative study and Marzano, et al.'s (2005) findings further suggest that multiple factors are involved leadership that produces results. This leads to the question of what specific traits, behaviors or influences inside and outside the realm of leadership have the greatest combined effect upon student achievement? Researchers have recently examined some of the specific traits and behaviors suggested by Cotton and Marzano, et al. in relation to student achievement (Leithwood & Mascall, 2008; Mackey, Pitcher, & Decman, 2006), but little work to date has included an examination of how the traits and behaviors may work in conjunction with or against one another.

Theoretical Model

Recognizing the potential indirect link between school leadership and student achievement, Ross and Gray (2006a) developed a theoretical model that statistically tied elementary school leadership to student achievement through mediating variables. Their model proposed that transformational leadership had direct effects upon collective teacher efficacy which, in turn, affected the teacher's commitment to organizational values. Using data collected from 205 schools and 3,042 teachers in Ontario, Canada, the

researchers utilized path analysis and structural equation modeling to statistically link leadership style and teachers' commitment to organizational values through the mediating effect of collective teacher efficacy (Ross & Gray, 2006b). The researchers then extended their study to propose that these elements would have a combined effect upon student achievement. Since socioeconomic status had been previously found to be linked to both student achievement (Hirth & Mitchell, 1995; Okpala, et al., 2000; Yap, 1997) and collective teacher efficacy (Goddard, LoGerfo, & Hoy, 2004), socioeconomic status was also entered into the model. A diagram of the model is presented in Figure 1.

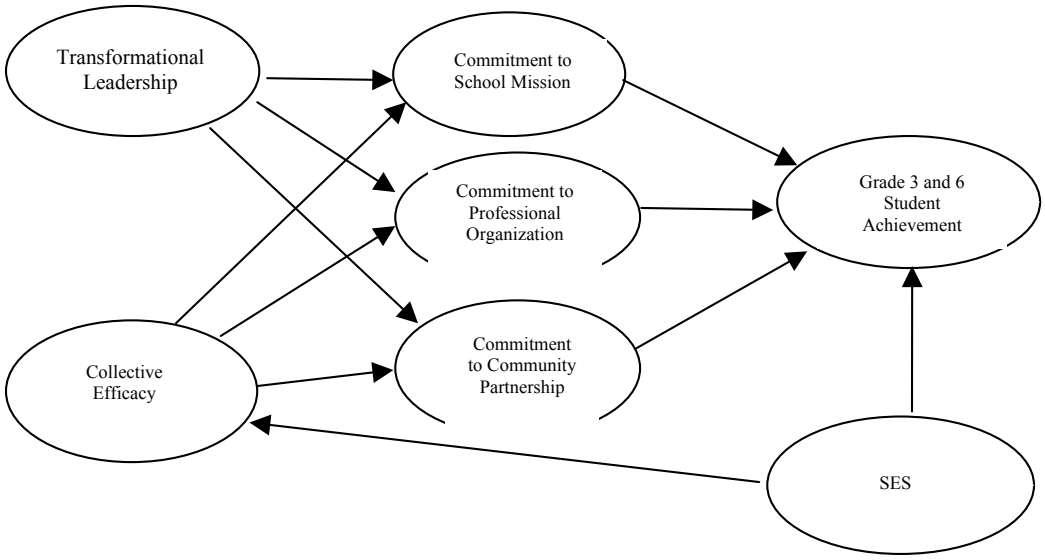


Figure 1. Model linking leadership to [illegible]evement through teacher commitment variables. From "School Leadership and Student Achievement: The Mediating Effects of Teacher Beliefs," by J. Ross and P. Gray, 2006a, *Canadian Journal of Education, 29*, p. 800 (diagram used with permission from the authors).

Again using path analysis and structural equation modeling, Ross and Gray (2006a) concluded that schools with higher levels of transformational leadership in their principals had higher levels of collective teacher efficacy, greater commitment to the

school's mission, community and partnerships with the community and, through the mediating effect of these relationships, produced higher levels of student achievement. Furthermore, they found schools with a higher socioeconomic status had greater levels of collective teacher efficacy, suggesting an additional element in the model that could potentially strengthen the relationships.

Ross and Gray's (2006a) research linking transformational leadership and student achievement through mediating variables implied that teachers' commitment to organizational values may be nested within the relationship leadership-achievement connection implying possible intra-cluster correlation. Both hierarchical linear modeling (HLM) and structural equation modeling (SEM) have been used to examine the links between variables with these characteristics, each yielding their own advantages (Nettles & Herrington, 2007; Wallace, 2009). The advantages to HLM are the ability to examine the cross-correlational clusters and the random effects of interacting variables. The advantages to SEM are the ability to examine the effects throughout the entire model, including the direct versus indirect effects of specific variables.

In their discussion of the findings, Ross and Gray (2006a) made two suggestions for future research. First, they suggested that teacher's instructional practice, which is inherently embedded in a school's culture and a primary factor in a teacher's level of efficacy, should be added to the model as a mediator effect of professional commitment on student achievement. Secondly, they suggested the addition of a subject-specific instrument be used when testing links between specific instructional practices and student achievement. The combination of the Ross and Gray (2006a) model with the meta-analytic work of Cotton (2003) and Marzano, et al. (2005), have provided support for

both a multi-factor model that links leadership in conjunction with other variables to student achievement and the possibility of mediating variables in the relationship between leadership style and student achievement.

Although the Ross and Gray (2006a) research provided strong support for the indirect tie between leadership style and student outcome, it neglected to examine the construct of school culture which encompasses commitment to a school's mission and specific actions and behaviors of teachers and the administration, as a potential predictor in the model. In addition, the model was restricted to elementary teachers and principals. Replication of the Ross and Gray (2006a) study using 1) data collected from a different geographic location 2) data from high school rather than elementary teachers and students, and 3) using a similar SEM examination of the model could provide a stronger foundation for further research in the area and support for administrative accountability procedures.

Leadership and Student Achievement

Does leadership style affect student achievement? Maxwell (1998) in his book *The 21 Irrefutable Laws of Leadership* describes leadership as having historical constancy regardless of cultural change. He posited

> One of the most important truths I've learned over the years is this: Leadership is leadership, no matter where you go or what you do. Times change. Technology marches forward. Cultures vary from place to place. But the true principles of leadership are constant – whether you're looking at the citizens of ancient Greece, the Hebrews in the Old Testament, the armies of the last two hundred years, the rulers of modern Europe, the

> pastors in local churches, or the businesspeople of today's global economy. Leadership principles stand the test of time. They are irrefutable. (p. xx)

Two types of leadership that have been common in describing successful versus unsuccessful leaders are transactional leadership and transformational leadership (Burns, 1978). In short, transactional leaders are more focused on day-to-day operations of an organization and ensuring implementation of following rules and procedures whereas transformational leaders are agents of change within an organization. Transformational leadership has often been contrasted with transactional leadership with transformational leadership often being more desirable.

Transactional leadership.

Transactional leadership was described by Burns (1978) as motivating followers through a rewards-based system. Cherry (2007) has described the differences between a transactional leader and a transformational leader in that "transactional leadership conjures a managerial image, while transformational leadership evokes images of extraordinary individuals such as Martin Luther King, Jr. or General Colin Powell" (p. 3).

Transactional leadership has been described as more of a contractual, give-and-take style which has focused more on specific procedures of the leader (Leithwood & Duke, 1999). With transactional leadership being built more upon a system of rewards and contingency, it can take different forms, with some more effective than others. Bass and Avolio (1994) described three forms of transactional leadership: management-by-exception-passive, management-by-exception-active and constructive-transactional. Leaders that fall under the category of management-by-exception-passive are usually

involved in setting rules and guidelines but then wait for problems to occur before they execute leadership behaviors. In contrast, leaders who exhibit management-by-exception-active behaviors are generally involved in setting rules and guidelines but tend to micromanage during implementation. Leaders who exhibit constructive transactional behaviors, generally the most successful of the three transactional styles, are involved in setting rules and guidelines through establishing goals and reward systems. In addition, subordinates of constructive transactional leaders are generally invited to participate in change implementation, increasing trust and respect in a leader.

Transformational leadership.

Transformational leadership was first defined in James Burns' (1978) work researching political leaders. He described the transformational leadership style as enacting change within an organization through changes in the perception of organizational values and achievement. Bass (1985) further built upon the ideas of transformational leadership by defining it in terms of a transformational leader's followers. He described the followers of a transformational leader as feeling trust and respect in their leader and motivated to do their best through the leader's charisma and respect for individuality. Bass and Avolio (1994) have also suggested that transformational leaders generally have better relationships with their supervisors and that subordinates or employees of transformational leaders often exert more effort toward their organization's goals.

Transformational leaders can be categorized by four factors: individual consideration, intellectual stimulation, inspirational motivation, and idealized influence. Individual consideration in leadership has put the focus on individual needs and

recognizing where individuals in an organization may be neglected or overlooked. Intellectual stimulation from a leader has encouraged problem solving in situations by thinking of solutions to problems by utilizing resources in new ways. Leadership through inspirational motivation has been achieved through empowerment of individuals in an organization. Here the leader has exerted a presence of motivation by transference of vitality through powerful communication. A leader with idealized influence has achieved personal success which is modeled in the organization.

Since its inception, transformational leadership has been compared to traditional styles of leadership including democratic, autocratic, relations-oriented, task-oriented (Molero, Cuadrado, Navas, & Morales, 2007), and servant leadership (Stone, Russell, & Patterson, 2004).

According to Kanji and Moura (2001) transactional and transformational leadership are both necessary and complementary in building effective organizations; however, each has a different purpose in management and leadership. Bass and Avolio (1994) described this interaction more specifically as having an augmentation effect where transformational leadership builds upon a foundation of transactional leadership styles.

The augmentation effect.

Although it has seemed that the transformational leadership style has been the more desirable of the two when compared to transactional, observation and research has shown that each form can serve a purpose based upon situational factors. Avolio and Bass (1991) indicated that transformational and transactional leadership could be measured in addition to non-leadership through a full-range leadership model. They

indicated that a single leader could exhibit characteristics of different styles – transformational, transactional, and laissez-faire or non-leadership – at different points in time. Furthermore, the authors suggested that transformational leadership has not replaced transactional or non-leadership but has, conversely, added to it by encouraging others to enact their leadership behaviors. They termed this type of addition as the augmentation effect.

Lowe, Kroeck, & Sivasubramaniam (1996) examined the possibility of the augmentation through a meta-analysis of studies using the Multifactor Leadership Questionnaire (MLQ; Bass & Avolio, 1991). They found that the MLQ had been used in over 75 studies to analyze leadership characteristics of various organizations including government, military, manufacturing, and religious organizations. Using the results of the 75 studies, the researchers hypothesized that 1) transformational leadership was more prevalent in private than public organizations; 2) transactional leadership was more prevalent in public than private organizations; 3) the effectiveness of both transformational and transactional leadership in an organization was moderated by whether the organization was public or private; 4) more upper level managers were categorized as transformational leaders; 5) the effectiveness of both transformational and transactional leadership in an organization was moderated by the level of the leader in the organization; and 6) the effectiveness of both transformational and transactional leadership in an organization was moderated by the type of leadership criterion used to measure effectiveness.

Findings of the study indicated that contrary to what was hypothesized, transformational leadership was more prevalent in public rather than private

organizations with transactional leadership having no clear impact on effectiveness in either public or private organizations. Furthermore, whether an organization was public or private did not moderate leadership style in determining an organization's level of effectiveness; however, leadership criterion on the Multifactor Leadership Questionnaire was a strong moderator between leadership and an organization's effectiveness. Finally, meta-analysis also indicated that, contrary to hypotheses, upper level leaders more often practiced transactional leadership whereas lower level leaders more often practiced transformational leadership.

Using similar methods as the Lowe et al. (1996) study, Judge and Piccolo (2004) also examined the validity of the augmentation effect on transformational and transactional leadership using a meta-analytic method. They hypothesized that 1) both transformational leadership and contingency reward transactional leadership had a positive, non-zero relationship with specific leadership criteria; 2) transformational and charismatic leadership exhibited similar validities; 3) exception-passive and laissez-faire leadership had a negative, non-zero relationship with specific leadership criteria; and 4) transformational leadership predicted leadership criteria, controlling for all three types of transactional leadership behaviors and laissez-faire leadership. The fourth hypothesis represented the augmentation effect of transformational leadership.

The meta-analysis showed that both transformational and reward-contingency leadership had positive correlations with leadership criteria with transformational leadership being more strongly correlated with leader effectiveness and follower satisfaction in the leader with the leader and reward-contingency leadership being more strongly correlated with leader job performance and follower job satisfaction.

Furthermore, when controlling for the three types of transactional leadership and laissez-faire leadership, transformational leadership predicted four of the five leadership criteria with the exception being leader job performance.

Results from these studies have indicated support for the augmentation effect suggesting that the differences between transformational and transactional leadership styles may lie in the ability of transformational leaders to build upon the flexibility in their style.

Measuring leadership style.

Despite the agreement that leadership has such an important effect upon outcomes in various environments, particularly in business and education, the definition of leadership and the characteristics that make a good leader are not clearly defined. This makes leadership difficult, but not impossible, to measure. Researchers have utilized various tools to quantify leadership using both qualitative and quantitative methods. So, yes, leadership can be measured. The focus upon this particular question is not whether leadership can be measured but how leadership has been measured in research and in practice and what methods have yielded valid and pertinent results.

Most researchers have agreed that leadership should be measured in a comprehensive manner to be effective; however, tying a number to a construct that has so much bearing upon the success of an organization can cause apprehension, and rightfully so. Gandossy and Guarnieri (2008) suggest that "(A) measurement mind-set is essential to making people management decisions that are fair and meaningful. Because metrics create a level playing field, they help managers answer questions such as 'Who are my top performers?' and 'Are we making smart decisions about developing them to meet

current and future needs?'" (p. 65). They further suggest a holistic framework of creating a measurement mindset in the business world that focuses upon four key groups: people managers, human resource professionals, business leaders and key talent. The authors suggested that adoption of the measurement mindset in the four key groups increases the organization's quality and ability to capitalize upon its strengths. One of the most recently developed and refined measures that focused upon a comprehensive and holistic approach to measuring leadership qualities in organizations is the Multifactor Leadership Questionnaire (MLQ; Bass & Avolio, 1991, 2004).

The long form of the MLQ is an 80-item measure most often used in capturing characteristics of transformational leaders. The MLQ requires subjects to rate the applicability of items to their own behavior, using a 5-point scale. The test suggests nine measures of transformational leadership including attributed charisma, idealized influence, inspirational motivation, intellectual stimulation, individualized consideration, contingent reward, active management by-exception, passive management-by-exception, and laissez-faire leadership which have been confirmed using confirmatory factor analysis (Muenjohn & Armstrong, 2008).

Leadership in Education

There are various forms of leadership in public education. The superintendent is the leader in a school district with the board of education establishing district policies. The principal is the leader in a school with a site-based council often determining individual school policy. However, when an individual school is recognized for either success or failure, the principal has taken on the face and representation for the

organization; thus, for means of narrowing the term of school leader, the principal was the most logical choice.

Research on leadership style's relationship to student achievement has indicated that school principals with a transformational style may contribute to increased literacy levels (Mackey, et al., 2006) and increases in scores on subject-specific achievement tests (Suskavcevic & Blake, 2004). The Mackey, et al. (2006) study collected qualitative data from three second grade classrooms in four different schools during language arts instructional time and quantitative data as measured by the California Test of Basic Skills to examine how student achievement in reading could be influenced by the students as measured by principal ratings on the National Association of Elementary School Principals (NAESP) six standards for evaluation. The four principals were described as the direct instructional leader, the guided reading leader, the open court leader and the balanced literacy with open court embedded leader. The researchers concluded that the principal who exhibited balanced literacy with open court embedded provided the strongest evidence for consistent competency with a combination of defined vision and leading for change. In addition, the comprehensive Ross and Gray (2006a) model linked transformational leadership to student achievement through the mediating variable of collective teacher efficacy.

Leadership in Kentucky schools.

Despite the push for school leader accountability, the research relating leadership style and student achievement in Kentucky schools has been weak to date. Bulach and Malone (1994) examined the effects of leadership style on school climate and student achievement finding no statistically significant relationship between the leadership and

achievement constructs. However, they did find that the more successful principals used a leadership style that more often than not led to involving parents and community members in school decision making.

School Culture and Student Achievement

Does a school's culture have an effect upon its students' achievement? Culture can be defined as "the total, generally organized way of life, including values, norms, institutions and artifacts that is passed on from generation to generation by learning alone" (Theodorson & Theodorson, 1969). School culture can be defined as the "historically transmitted patterns of meaning that include the norms, values, beliefs, ceremonies, rituals, traditions, and myths understood, maybe in varying degrees, by members of the school community" (Stolp & Smith, 1995, p. 23) with three common threads that have emerged from multiple descriptions of the construct:

1) A shared set of beliefs among the school's stakeholders
2) A vision of how the school's stakeholders see themselves and the world
3) A set of unwritten rules and norms that define the stakeholder's behaviors (Schoen & Teddlie, 2008).

School culture versus school climate.

School culture and school climate are two similar constructs that have often been used as interchangeable terms; however, the differences have been shown to be quite distinct in educational research where school climate has represented the psychological side of a school's makeup; whereas, school culture has represented the anthropological side of a school (Schoen & Teddlie, 2008). School climate has often been described as how effective the school functions including the physical environment, the social

environment, and expectations of student behavior and outcome (Creemers & Reezigt, 1999) with others describing school culture as "as the heart and soul of the school and the essence of the school that draws teachers and students to love the school and to want to be a part of it" (Freiberg & Stein, 1999) with a supportive school climate including

1) A continual sharing of ideas
2) Collaboration between and among teachers
3) A sense of egalitarianism among groups of teachers
4) Practical application of instructional changes, and
5) Principals who desire to improve their school's culture (Macneil & Maclin, 2005).

Hoy, Tarter, and Kottkamp (1991) clarified the differences between school climate and school culture positing that schools were more than just their effectiveness factors and that they have historically taken on a personality or having a distinct culture. In response to the interchangeable nature of school climate and school culture, Schoen and Teddlie (2008) developed a conceptual model of school culture that served to clarify the concept of school culture as a branch of organizational culture with four dimensions (professional orientation, organizational structure, quality of the learning environment, and student-centered focus) and three levels (artifacts, espoused beliefs, and basic assumptions). The Schoen and Teddlie (2008) model was used as the theoretical model for a meta-analysis of 3,378 schools that found school culture to have a moderate effect size on student achievement in K-12 schools in the United States (Bulris, 2009).

Measuring school culture.

Educational researchers have used various measures of school culture over the years including The Perceptions of School Culture Inventory (POSC; Cowley, Finch, & Blake, 2002) and The School Culture Survey (Leithwood, Aitken, & Jantzi, 2001); however, only one measure has been described in terms of a triage instrument to be used as an indicator of further assessment needed if the culture has been deemed to be toxic (Wagner, 2000).

Wagner (2000) described school culture in terms of shared in-school and out-of-school experiences, a sense of community, and family or team. He, with colleague Masden-Copas developed the School Triage Survey to measure a school's culture based upon three components: professional collaboration, affilliative and collegial relationships and efficacy or self-determination. The School Culture Triage Survey has been previously used in Kentucky schools to conduct a needs analysis and plans for professional development (www.schoolculture.net) in addition to research on the relationship between school culture and student achievement (Shutt, 2004). Shutt (2004) established reliability in the School Culture Triage Survey through a pilot study from a sample of 135 teachers in six Kentucky elementary schools finding all three subscales to have internal consistency with Cronbach's alphas of .79 (Professional Collaboration), .87 (Affilliative Collegiality), and .88 (Self-Determination/Efficacy).

School Culture in Education

Regardless of a school's size, demographic make-up or age of students, the profile of a school's culture can be specifically described by seven norms:

1) rituals

2) expectations

3) relationships

4) curricular focus

5) extracurricular activities

6) decision-making processes

7) graduation (exit) requirements (Small Schools Project, 2009).

School culture has been shown to be significantly related to teacher burnout rates (Friedman, 1991) and has been more recently linked to collective and general teacher efficacy, school climate and teacher job satisfaction and turnover rates (Mattingly, 2007). School culture has been described as the "hidden curriculum" (Wren, 1999), differing from school climate which has been described as a psychological component of a school's make up and school culture being defined as the anthropological component that defines the school (Schoen & Teddlie, 2008).

In a study by Campo (1993), the researcher proposed that principals of schools could make a difference by establishing a collaborative element in the school's culture. To do this, the Campo (1993) used a mixed-method design to examine the relationships between teacher collaboration and principals' strategies. Data came from two archival sources, both comprehensive studies of school improvement in Ontario and British Columbia. The qualitative analyses of the studies included a content analysis using a check list in matrix form and narrative descriptions and three case studies. Qualitative results indicated that teachers perceived themselves to be collaborative, involved in teacher talk and joint planning. It also indicated that teachers regarded collaboration important. Principals indicated that bureaucratic mechanisms were necessary to facilitate

collaboration which, in turn strengthened school culture. Quantitative results indicated that decision-making processes and strength in school culture contributed to collaboration in teachers. Furthermore, the researcher suggested that the principals who exhibited transformational leadership styles were more effective.

More recently, Gruenert (2005) utilized a quantitative method to examine the relationship between school culture and student achievement. Gruenert collected data from teachers at 81 elementary, middle and high schools in Indiana items on a 35-item School Culture Survey (Gruenert & Valentine, 1998) that included six factors: collaborative leadership, teacher collaboration, professional development, unity of purpose, collegial support and learning partnership. Both collaborative leadership and teacher collaboration were found to be significantly correlated with student achievement in math with unity of purpose and learning partnership strongly correlated with both achievement in math and reading. The strongest relationships were found at the elementary level. The researcher concluded that "School culture and student achievement are not divergent issues for school leaders to consider; this is not an 'either/or' decision" (Gruenert, 2005, p. 50).

School Culture in Kentucky Schools

In a study of 110 Kentucky elementary schools, Shutt (2004) hypothesized that there would be differences in schools ranked by student achievement levels based upon the assessment of three school culture behaviors as measured by the School Triage Survey and that school culture ratings accounted for the variance in Kentucky school accountability scores. Shutt found the highest school culture scores as measured by the School Triage Survey in schools with the highest academic index; whereas, the lowest

school culture scores were in schools with the lowest academic index. Furthermore, Shutt found efficacy/self-determination serving as the most dominant school culture behavior in the study and concluded that school culture is an essential in review of Kentucky schools that do not meet mandated goals. These results have indicated a tie between school culture and teacher efficacy which may, in fact, impact student achievement.

Teacher Efficacy and Student Achievement

Does teacher efficacy have a mediating effect on other variables and student achievement? Bandura (1977) first described self-efficacy as "beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (p. 3). He suggested that self-efficacy beliefs were mediators to behavioral change through motivation and the idea that one can succeed.

Defining teacher efficacy.

The term teacher efficacy has evolved over the years to become a combination of Bandura's (1977) self-efficacy within the personal and relational environment of the classroom. It has involved teachers, students, interactions, motivations and outcomes. The first description of teacher efficacy was coined in terms of whether teachers believed they could control the reinforcement of their actions (Armor, Conry-Osquera, Cox, Kin, McDonnel, Pascal, Pauly, & Zellman, 1976). Ashton (1984) later described teacher efficacy in terms of eight dimensions.

1) A sense of personal accomplishment: the teacher views teaching as meaningful and important

2) Positive expectations for student behavior and achievement: the teacher expects students to progress and achieve

3) Personal responsibility for student learning: the teacher welcomes accountability and responsibly monitors student progress and performance

4) Strategies for achieving objectives: the teacher sets a plan for student learning, set goals and use appropriate strategies to achieve them

5) Positive affect: the teacher feels good about teaching and about the students involved

6) Sense of control: the teacher believes actions in the classroom affect student learning

7) Sense of common teacher/student goals: the teacher partners with students to succeed

8) Democratic decision-making: the teacher involves students in making decisions regarding goals and strategies.

Tschannen-Moran and Woolfolk-Hoy (2001) later defined teacher efficacy in the context of self-efficacy as a teacher's "judgment of his or her abilities to bring about desired outcomes of student engagement and learning even among those students who may be difficult or unmotivated" (p. 784). Despite the variability in defining teacher efficacy and the dimensions involved, it has been consistently linked to professional commitment to organizational values (Evans & Tribble, 1986; Ross & Gray, 2006a, Ross & Gray, 2006b), implementation of progressive and innovative teaching methods (Fuchs, Fuchs, & Bishop, 1992), student achievement (Moore & Esselman, 1992; Ross & Gray,

2006a), and attitude and affective growth (Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998).

Measuring teacher efficacy.

Measurement of teacher efficacy had a fairly simple beginning by the Rand Corporation in the desire to examine teachers' beliefs in their ability to affect student achievement in the context of social learning theory and locus of control (Rotter, 1966). With the intention of examining the effects of reading strategies and interventions, the Rand studies included two additional Likert items on a five point scale indicating a level of agreement from strongly agree to strongly disagree to determine the teachers sense of internal versus external control of factors affecting. The items were worded as 1) When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his or her home environment, and 2) If I really try hard, I can get through to even the most difficult or unmotivated students. A teacher efficacy score was generated by summing the responses on the two items.

Though this initial measure was simple in its makeup, the two Rand items were used in studies from the late 1960's to early 1980's providing results that whetted the appetite for more complex and specific measures of the construct. However, problems emerged in establishing construct validity using only two items and a construct that wasn't solidly defined (Henson, 2001). The inconsistencies between the definition of the teacher efficacy, measurement of teacher behavior versus teacher beliefs and questions in establishment of construct validity have just recently become less problematic in the past ten years with the establishment of more solid measures based upon theoretical framework instead of singular beliefs and behaviors.

Of all the measures for teacher efficacy over the years, the most commonly used has been Gibson and Dembo's (1984) Teacher Efficacy Scale and variations upon the Teacher Efficacy Scale. The Teacher Efficacy Scale evolved from the combination of the initial Rand studies and the application of Bandura's social cognitive theory to teacher's beliefs and expectations in the classroom. The long form of the Teacher Efficacy Scale included thirty items on a six point Likert scale that ranged from strongly disagree to strongly agree. It produced a total score by summing all of the items and two additional subscale scores that represented personal teaching efficacy and general teaching efficacy.

Initial factor analysis studies on the Teacher Efficacy Scale yielded two factors which Gibson and Dembo (1984) labeled Personal Teaching Efficacy and General Teaching Efficacy. Cronbach's alphas measuring reliabilities for the two factors ranged from .75 to .81 for personal teaching efficacy and .64 to .77 for general teaching efficacy with the two factors being weakly related with correlations ranging from -.15 to -.20 (Tschannen-Moran, Woolfolk-Hoy, & Hoy, 1998). The Personal Teaching Efficacy factor was described as capturing the teacher's personal self-efficacy whereas the General Teaching Efficacy factor was designed to reflect teacher expectancy of student outcome (Anderson, Greene, & Loewen, 1988; Burley, Hall, Villeme, & Brockmeier, 1991; Woolfolk, Rosoff, & Hoy, 1990; Moore & Esselman, 1992; Saklofske, Michaluk, & Randhawa, 1988; Soodak & Podell, 1993).

With concerns of factor integrity confounded by item orientation, Deemer and Minke (1993) examined the Teacher Efficacy Scale by administering two 17-item versions of the instrument to teachers in graduate classes at a Northeastern United States university and conducting principal axis factoring. The factor analysis by principal axis

factoring for the first form yielded two factors that accounted for only 26.1% of the variance with 21.1% accounted for by the first factor that represented internal and general external teacher efficacy. Principal axis factoring on the second form, which reordered the items in a combination of positive and negative wording of the items, yielded two factors with the first accounting for 12.9% of the variance and the second accounting for only 5.5% of the variance. Scree plots for each form indicated single factor structures for each form.

The researchers then again used principal axis factoring to examine a single factor structure on each of the form of the Teacher Efficacy Scale finding that nine items loaded on the factor for Form A accounting for 20.8% of the variance, and eight items loaded on Form B accounting for 12.3% of the variance. Participants' scores on Form A indicated a high level of internal consistency with $\alpha = .81$ and a moderate level of internal consistency on Form B with $\alpha = .66$.

The findings of Deemer and Minke (1993) sparked a rethinking of teacher efficacy as a uni-dimensional construct and sparked use of development and use of shorter forms to measure teacher efficacy including measures of collective teacher efficacy, or a combined measure of efficacy representing how a group of teachers have the combined ability to affect students behavior and achievement.

Collective teacher efficacy.

According to Woolfolk, Rosoff, and Hoy (1990), a teacher's individual sense of efficacy has the potential to affect decisions within the classroom including lesson planning decisions, how to teach content, or how to manage students with teachers with higher levels of self-efficacy offering more challenging activities, in both content and

implementation, and those with lower levels of self-efficacy show lack of initiative in persistence, particularly with students having content or behavioral difficulties (Ashton & Webb, 1986). In contrast, collective efficacy has often been representative of a school's overall belief system with many of its defining characteristics similar to those of the school's culture (Kurtz & Knight, 2003) and has been associated with various forms of student achievement (Goddard, Hoy, Wayne, & Woolfolk, 2000).

Teacher efficacy in education.

Teacher efficacy has been linked to student achievement as measured by standardized tests in a variety of studies (Kerley, 2004; Ross, Hogaboam-Gray, & Gray, 2004; Goddard, et al., 2000; Ross, 1998) with teachers who exhibit high efficacy being more apt to experiment with their methods of instruction and modes of delivery (Goddard, LoGerfo, & Hoy, 2004). The Ross and Gray (2006a, 2006b) studies found schools that had higher levels of transformational leadership also had higher levels of collective, or general, teacher efficacy and higher levels of student achievement.

With regards to mediation, research has indicated that 1) collective teacher efficacy to be a mediator between school leadership style and teachers' commitment to organizational values (Ross & Gray, 2006b) and 2) teacher beliefs to be a mediator between school leadership and student achievement with collective teacher efficacy contributing to the variance accounted for by teacher beliefs (Ross & Gray, 2006a). A mediator can be described as one that accounts for a relationship between an independent and dependent variable (Baron & Kenny, 1986). To test for a mediating variable, the relationship between the independent variable and the mediator should be significant with the relationship between the dependent variable also significant. Conversely, the

relationship between the independent and the dependent variable should show little to no significance. With little research tying school leadership directly to student achievement but a host of studies linking teacher efficacy, particularly collective teacher efficacy, to student achievement in addition to other variables that also an effect upon student achievement, mediator analysis would be necessary to integrate within a viable relational model.

Teacher efficacy in Kentucky schools.

A variety of studies have linked general teacher efficacy to student achievement using Kentucky's academic index as a dependent variable. For example, Kerley (2004) found that general teacher efficacy was a moderately strong predictor of student achievement at the high school level in Kentucky with the additional variance being accounted for by teachers' beliefs that teaching influenced learning. Furthermore, Ross (1998) found a significant correlation between personal teaching efficacy, a subscale of general teacher efficacy, to be significantly related to achievement scores of Kentucky fourth graders in addition to teacher empowerment and transformational leadership. Also using elementary student and teacher population, Hayes (2007) found that general teacher efficacy in conjunction with the school culture subscale of collegiality predicted achievement as measured by academic index scores from Kentucky's Commonwealth Accountability Testing System.

Socioeconomic Status and Student Achievement

Does socioeconomic status have an effect upon student achievement? Statewide standardized testing has become the primary means of evaluation in the No Child Left Behind of 2001 mandate with schools undergoing detailed scrutiny if their test scores are

improving at an expected rate. Research has indicated that socioeconomic status is significantly linked to student achievement, highlighting the gap between the have's and the have-not's in U.S. schools (Okpala, et al., 2000; Yap, 1997; Hirth & Mitchell, 1995).

SES in education.

Hirth and Mitchell (1995) used t-tests and Pearson correlation coefficients for comparing student achievement test scores as measured by the Indiana Statewide Testing for Educational Progress-Plus (ISTEP) at the elementary and middle school level and SAT scores at the high school level of homogenous groups of students in Indiana. The researchers found no significant differences in student achievement scores based on per pupil expenditures; however, correlational analyses between demographic variables and student achievement scores at the elementary and middle school levels determined significant relationships between SES and student achievement scores with an average order of 0.73. When they examined the SAT scores of Indiana students at the high school level, the researchers found that the higher SES group scored approximately 54 points higher on the SAT than the lower SES group. In addition, they found that the lower SES group had a 10% lower graduation rate than the higher SES group. The researchers concluded that SES, even though confounded by other variables such as the stability of the home, educational level of the parents, and percentage of adults at the poverty level, significantly impacted student achievement. They furthermore suggested that spending more money on a district did not significantly affect the issue but that equal access to resources and educational tool had the potential to affect student achievement.

The Yap (1997) study correlated demographic variables of schools in the state of Washington with 4th grade, 8th grade and 11th grade standardized test scores. He found

significant correlations between the percent of ethnic minority students, the percent of students below the poverty level with student scores at all three grade levels and significant correlations between the percent of students in bilingual programs and the percent of students in compensatory reading programs with student scores at the elementary and middle school levels. He incorporated his findings into an evaluation strategy that could be used to assess the efficacy of an educational system at the district level, emphasizing the need to provide fair and equitable procedures in assessing annual yearly progress in a district.

Okpala, et al., (2000) used school, teacher and family variables from the North Carolina School Building Improvement Report and math and reading achievement scores of 4th graders from forty-two North Carolina elementary schools to examine the relationships between demographics and student achievement. The researchers found the percentage of students who received free/reduced lunch to be negatively correlated with both math and reading achievement scores. They also found teacher education level to be significant in explaining changes in math achievement scores but non-significant in explaining changes in reading achievement scores. The researchers suggested a link between the combined factors of school characteristics, teacher characteristics, student demographics and student achievement.

SES in Kentucky schools.

In Kentucky, the Council for Better Education (CBE) has found similar results to those at the nationwide level. In "Progress, But Not Enough Progress," a briefing paper published by the CBE (2006), it was stated that "results are especially inadequate for students from low-income families, students from ethnic minorities, and students with

disabilities" (p. 1). The CBE found that Kentucky students in a free or reduced lunch program had an average academic index score 19.7 points lower than those students not enrolled in a free/reduced lunch program. Furthermore, if current trends are not changed, the projected gap for those groups by the year 2014 was predicted to be 22.9.

In CBE's (2008) follow-up paper, the council found almost half of Kentucky's schools to be off-track in meeting the statewide goal by 2014 with students enrolled in the free/reduced lunch program exhibiting slow gains in achievement. According to the U.S. Census Bureau (2007), Kentucky ranked 48 out of 51 in median household income at $40,267. For an average family of four, a student in the household qualifies for free lunch with an average household income of $28,665; a student in a household qualifies for reduced lunch with an average household income of $40,793 (United States Department of Agriculture, 2009). This means that, theoretically, more than half of the households in the state of Kentucky qualify for free/reduced lunch. These findings with the demonstrated relationship between socioeconomic status and student achievement highlight the crucial part that leadership plays in countering circumstances beyond the realm of a school's control.

The role of a school's leader in providing collaboration, self-confidence and high expectations despite obstacles is imperative in creative a successful academic environment. Research has shown that schools with strong leadership as measured by the leadership style have been able to exhibit testing gains despite economic challenges (Wooderson-Perzan & Lunenberg, 2001). These findings suggest the link between socioeconomic status and leadership style, particularly in areas with a lower

socioeconomic status, may have the potential to affect student achievement despite that challenges inherently embedded in society.

Summary

A review of the literature examining the effects of leadership style alone on student achievement has produced few significant results but has opened the door for many possibilities. School leadership has obviously had an effect upon student achievement, but how? The answers seem to lie in other factors that are integrated into the school leadership-student achievement relationship.

The Ross and Gray (2006a) model produced preliminary comprehensive results to explain the relationship between leadership style and student achievement. Building upon the model with the base of literature linking leadership style and student achievement to other variables would provide support for the currently confounded tie and arm school districts and educational decision-makers with the information necessary to strengthen their administrators, teachers, programs and, ultimately, students.

CHAPTER III: METHODOLOGY

Participants

The proposed study included responses from high school principals and teachers from a randomly chosen sample of 120 Kentucky high schools. Schools were randomly selected from a list generated by the Council for Better Education ranking schools based upon predicted achievement for 2014. Sixty schools were chosen from the group with predicted academic index of 89.9 or lower, and 60 schools scores were chosen from the group with a predicted academic index of 90.0 or above. This grouping of scores ensured a population of schools that adequately represented a range of achievement scores from low to high. Since student achievement scores for 2009 and 2010 were used in the study, schools that changed principals after the 2009-2010 school year were excluded from the study.

Measures

Leadership style.

Multifactor Leadership Questionnaire – short form (Bass & Avolio, 2004; MLQ 5x-short) The MLQ 5x-short form was an 45-item measure most often used in capturing characteristics of transformational versus transactional leaders. The MLQ 5x-short form was a shorter version of the MLQ 5x-long form which included 80 items. The MLQ-5x short form required subjects to rate the applicability of items to their own behavior, using a 5-point Likert scale ranging from 0 representing "Not at all" to 4 representing "Frequently, if not always" to statements such as "I fail to interfere until problems become serious," and "I help others to develop their strengths." The measure has

included a leader for and a rater form. The leader form was used in the current study and administered to the principals of randomly chosen schools.

The MLQ-5x short form was derived from the earlier MLQ-5R which categorized leadership characteristics using seven factors instead of six. After criticism of the measure's discriminate validity on the factors, citing inter-correlations between factors, the authors conducted a series of analyses to test the construct validity of the factors. The results of their analyses yielded the MLQ-5x short form which suggested six measures of transformational leadership including charisma/inspirational, intellectual stimulation, individualized consideration, contingent reward, active management by-exception, and passive avoidant which have been confirmed using confirmatory factor analysis (Muenjohn & Armstrong, 2005). The MLQ-5x short form was chosen because of its ability to measure leadership qualities effectively while being time-sensitive in administration.

Collective teacher efficacy.

The Collective Efficacy Scale (CE-Scale, Goddard & Hoy, 2002) was a 21-item inventory that was designed to measure the collective efficacy of a school. The measure rated items on a 6-point Likert scale with ratings of 1 which represented "Strongly disagree" to 6 which represented "Strongly agree" on questions such as "If a child doesn't want to learn teachers here give up," and "Teachers in this school have what it takes to get the children to learn."

The CE-Scale was developed by modifying the original Gibson and Dembo (1984) Teacher Efficacy Scale to reflect collective rather than individual teacher efficacy. This was achieved by changing the word "I" to "we" in the items and by adding items

written by a panel of experts who reviewed the literature on teacher efficacy. Initial factor analyses on the revised and added items yielded the included 21 items (Goddard et al, 2000). The measure was further tested for criterion-related validity through comparison of personal teaching efficacy, yielding an $r = .54$, $p < .01$ and for predictive validity using hierarchical linear modeling to predict scores on mathematics and reading achievement tests (Goddard & Hoy, 2002).

School culture.

The School Culture Triage Inventory (Wagner & Masden-Copas, 2002) was a 17-item measure designed to assess a school's culture based upon three specific culture behaviors: professional collaboration, affilliative and collegial relationships, and efficacy or self-determination. The inventory rated items on a 5-point Likert scale with 1 = "Never" to 5 = "Always or almost always" on statements such as "Teachers and staff discuss instructional strategies and curriculum issues" and "When something is not working in out school, the faculty and staff predict and prevent rather than react and repair."

The School Culture Triage Inventory has been used in over 8000 schools with evidence of reliability in studies of school culture and student achievement ((http://www.schoolculture.net/important.html). Furthermore, in a study of the relationship between school culture and student achievement in Kentucky schools, the measure was found to have internal consistency with Cronbach's alphas of .79, .87, and .88 on the three scales of Professional Collaboration, Affilliative Collegiality, and Self-Determination/Efficacy (Shutt, 2004).

Socioeconomic status.

SES was measured by the percentage of students who receive free or reduced lunch within the school. This statistic was provided by the school's principal.

Student achievement.

After the passage of Kentucky's Senate Bill 1 in 2009, the Council for Better Education, the Kentucky Association of School Councils, and the Pritchard Committee collaborated to develop a measure to represent overall school results from annual performance on the KCCT. Their product was the transition index. Similar to the academic index, the transition index was calculated by taking each school's percentage of students at each performance level, multiplying each percentage by a multiplier, and then summing the products to obtain a scaled number between 0 and 140. The final transition index for the school was obtained by taking the scaled number in each subject area (Reading, Mathematics, Science, Social Studies, and On-Demand Writing), multiplying by the appropriate multiplier based upon school level (Elementary, Middle, or High), and then summing the products to produce a final scaled number between 0 and 140. The transition indices for each school were considered comparable to academic indices which were used prior to passage of Senate Bill 1 in 2009 (Kentucky Department of Education, 2009).

The transition index has been designed to track improvement from year to year whereas the No Child Left Behind results have been dichotomous in nature with schools only receiving results of whether goals have or have not been met. For this reason, the current study has used the difference in transition index scores by school from 2009 to

2010 as the dependent variable for the study. The residual difference in scores was chosen in order to control for variability in annual testing of different student groups.

Research Design

The study's design was quasi-experimental. Schools were chosen randomly; however, they were grouped into low-achieving and high-achieving categories to ensure equal group representation before random selection from each group occurred.

An initial email was sent to superintendents for the district of randomly chosen schools through Kentucky's global mailing list that explained the purpose of the research and a letter of permission to allow schools to participate in the survey. After superintendent permission, a second email was sent to principals of the chosen school that included a description of the study, purpose of the research and letter of permission. The email also indicated that principals who chose for their school to participate would be eligible for a drawing for one of four $100 VISA gift cards and also would receive a summary of their individual school's results. Principals who responded within 7 days were provided with two follow-up emails. The first provided a Survey Monkey link to the Multifactor Leadership Questionnaire 5x short form (Bass & Avolio, 1994) with an additional question indicating the school's percentage of students who received free and reduced lunch. The second email included a link to be forwarded to all teachers within the responding principal's school for completion of the School Culture Triage Survey (Wagner & Masden-Copas, 2002) and the Collective Efficacy Scale (Goddard, 2002) with an additional item to identify the teacher's school. Only schools with five or more teacher responses per school were included in the final analysis.

Principals who had not responded within two weeks of the initial email, were contacted again by a follow-up email with the same description of the study and invitation for participation.

Data for the dependent variables of student achievement were collected from Kentucky's State Department of Education's database of transition indices for each school in the state that participated in the mandatory spring testing of eleventh graders. In order to control for variability in annual testing of different student groups, student achievement was calculated as the residual gain or loss between transition indices from 2009 to 2010.

An overall representation of the variables was reported through means, standard deviations and percentages in each category. Additionally, the reliability for each survey instrument was assessed for internal consistency using Cronbach's alpha.

To assess the hypotheses from the first research question, relationships between the independent variables (leadership style and teacher efficacy, leadership style and school culture, leadership style and socioeconomic status) and independent and dependent variables (leadership style and student achievement, teacher efficacy and student achievement, school culture and student achievement, socioeconomic status and student achievement) were explored through Pearson product-moment correlations. To assess the hypotheses from the second research question, the relationship between all independent variables and the dependent variable were examined through path analysis and structural equation modeling.

Data Analysis

Research Question #1: To what degree is leadership style related to school culture, teacher efficacy, and student achievement?

Hypothesis 1: Leadership style is related to school culture.

To test this hypothesis, the scores on the MLQ 5x-short form were correlated with the average score per school on the School Culture Inventory by a Pearson product-moment correlation coefficient.

Hypothesis 2: Leadership style is related to collective teacher efficacy.

To test this hypothesis, the scores on the MLQ 5x-short form were correlated with the average score on the Collective Efficacy Scale per school by a Pearson product-moment correlation coefficient.

Hypothesis 3: Leadership style is related to student achievement.

To test this hypothesis, the scores on the MLQ 5x-short form were correlated with the residual scores from 2009 to 2010 transition indices by school.

Research Question #2: To what degree do school culture, teacher efficacy, and socioeconomic status account for variance in the relationship between leadership style and student achievement?

Hypothesis 1: Both leadership style and school culture are predictors of student achievement.

To test this hypothesis, the scores on the MLQ 5x-short form were entered into a step-wise multiple regression model with scores on the School Culture Triage Inventory to determine how much variance each contributed to the model and whether the model reached a level of statistical significance with the two predictors.

Hypothesis 2: Leadership style affects school's culture through collective teacher efficacy, which, in turn, affects student achievement.

To test this hypothesis, the scores on the MLQ 5x-short form were entered into a step-wise multiple regression model with scores on the School Culture Triage Inventory and Collective Efficacy Scale to determine how much variance each contributed to the model and whether the model reached a level of statistical significance with the two predictors. Then, the path between school culture, teacher efficacy and student achievement was analyzed using a goodness of fit index with each variable's variance accounted for through structural equation modeling.

Hypothesis 3: The relationship between leadership style, school culture, and student achievement is mediated by higher levels of collective teacher efficacy regardless of the school's SES level.

To test this hypothesis, scores on the MLQ 5x-short form, average school scores on the School Culture Triage Inventory, and average school scores on the Collective Efficacy Scale, and percent of students who receive free and reduced lunch with the school were examined through a goodness of fit index and variance accounted for through structural equation modeling.

CHAPTER IV: RESULTS

The purpose of the study was 1) to examine the relationship between leadership style, school culture, teacher efficacy and student achievement and 2) to determine to what degree do school culture and collective teacher efficacy, and socioeconomic status account for variance in the relationship between leadership style and student achievement. The format of this chapter has included a summary of the study design, descriptive statistics for the sample and results that address research questions one and two with specific results for each specific hypothesis.

Summary of the Study Design

Email invitations were sent to the superintendents of 120 randomly selected Kentucky public high schools explaining the purpose of the research. After letters agreeing to the district's participation had been signed by the superintendents, the principals of each school also received email invitations that explained the purpose of the research and a letter of invitation to participate in the study. Of the 120 schools that were contacted, eight were not eligible for participation, 20 responded no to participation, 13 gave superintendent permission without response from the principal, and 13 responded to the surveys. Principals who chose to participate and provided a complete set of survey responses were entered into a drawing for one of four $100 Visa gift cards. In addition, those who chose to participate received a summary of their individual results on the leadership questionnaire and cumulative results from the school culture and collective teacher efficacy scales. Those high school principals who did not respond to the initial email invitation after two weeks were again invited by email. Some principals chose to

contact the researcher with additional questions and then make a decision about participation.

Data for the independent variables were collected using Survey Monkey, an online survey tool. Participating high school principals responded to a researcher-designed school demographics questionnaire and the Multifactor Leadership Questionnaire (MLQ 5X-Short; Bass & Avolio, 1994). Principals that responded to MLQ 5x-short form received an email link from the researcher to forward to his or her school's teachers to be used to respond to the School Culture Triage Survey (Wagner & Masden-Copas, 2002) and the Collective Efficacy Scale (Goddard & Hoy, 2002). Only schools with five or more teacher responses were included in the final results.

The participants in the study included principals (N=13) from Kentucky public high schools and teachers (N=239) from the high schools whose principals chose to participate in the study. Approximately 18.2 teachers from each school responded to the surveys with a minimum of six and a maximum of thirty-five teachers per school. Responses from all questionnaires exhibited good reliability with results listed in Table 1. The sample included schools from various geographic regions across the state. Identifying information was asked only from principals in order to ensure teachers did not feel coerced into participation. Principals provided their gender, length of employment at the present school, and approximate percentage of students in their school who received free and reduced lunch.

Table 1

Reliability Statistics for all Study Questionnaires

	α	N
Multifactor Leadership Questionnaire – 5x Short Form	.77	13
School Culture Survey	.93	239
Subscale – Professional Collaboration	.76	
Subscale – Affilliative Collegiality	.86	
Subscale – Self-Determination/Efficacy	.90	
Teacher Efficacy Scale	.88	230

Data for dependent variables of student achievement were collected from Kentucky's State Department of Education's database of 2009 and 2010 transition indices for each school participating in the study. This data was available to the public after the embargo date.

Descriptive Statistics

Descriptive information for the sample of schools was presented in Table 2. Of the 13 principals who participated in the study, 30.8% (n=4) reported having more transformational characteristics, 30.8% (n=4) reported having more transactional characteristics, 30.8% (n=4) reported having both transformational and transactional characteristics, and 7.7% (n=1) reported having characteristics of passive/avoidant leadership.

Table 2

Descriptive Statistics of Schools Participating in the Study Examining School Leadership and Student Achievement

N=13	Male (%)	Female (%)
Principal's Gender	61.5 (n=8)	38.5 (n=5)
	Declining (%)	Improving (%) or On-Track
Projected Status by 2014 from the Council for Better Education	38.5 (n=5)	61.5 (n=8)
	M (SD)	n
Principal's Length of Employment at the Present School in Years	3.9 (1.2)	7
Percent of Students Receiving Free or Reduced Lunch	49.4(14.9)	13
Transition Index Score in 2009	80.6(7.2)	13
Transition Index Score in 2010	78.7(8.2)	13
Difference from 2010 to 2009	-1.9(4.6)	13

Results for Questions One and Two

Research Question One: To What Degree is Leadership Style Related to School Culture, Teacher Efficacy, and Student Achievement?

Hypothesis 1: Leadership style is related to school culture.

To test this hypothesis, the scores on the MLQ 5x-short form were first averaged to yield summary scores to represent transformational leadership, transactional leadership, and passive/avoidant leadership. Each of the summary scores was then correlated with the total score on the School Culture Triage Inventory. Pearson product-

moment correlations indicated that neither type of leadership had significant impact upon total school culture in this sample.

However, to examine the potential impact of leadership attributes and behaviors on school culture, the individual self-reported MLQ 5x-short form scores were correlated with the subscales of Professional Collaboration, Affilliative Collegiality, Self-Determination/Efficacy, and the total scores on the School Culture Triage Inventory by a Pearson product-moment correlation coefficient. Results representing these correlations are presented in Table 3. The results indicated that two attributes of transactional leadership were related to school culture. Contingent Reward was positively correlated with total scores on the School Culture Survey, $r = .62$, $p = .02$, and Management-by-Exception (Active) was negatively correlated with school culture, $r = -.66$, $p = .01$. Scatterplots displaying these relationships were presented in Figures 2 and 3.

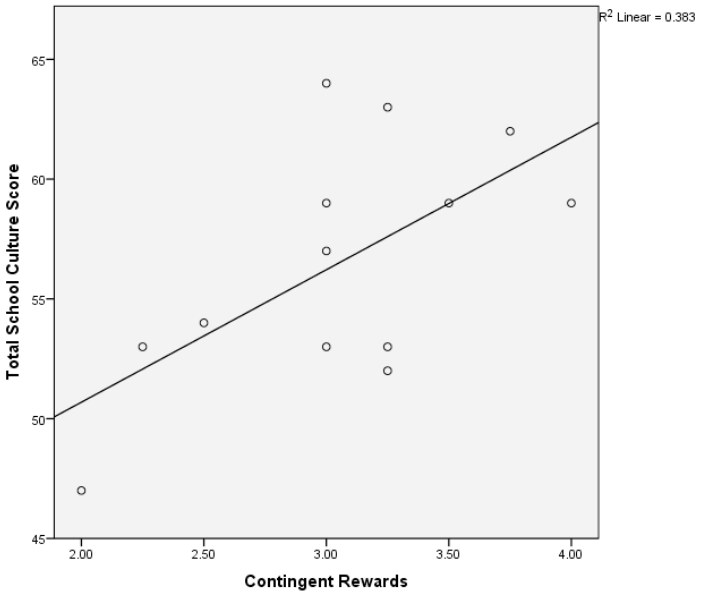


Figure 2. The relationship between self-reported transactional attributes of Contingent Reward and teacher reports of school culture in a sample of Kentucky high schools.

Table 3

Correlations Between Leadership Characteristics and Outcomes on the MLQ-5x Short Form and School Culture Variables

	Professional Collaboration		Affilliative Collegiality		Self-Determination/ Efficacy		School Culture Total Score	
N=13	r	Sig	r	Sig	r	Sig	r	Sig
Transformational Leadership								
Idealized Attributes	.27	.37	.13	.68	.13	.68	.17	.58
Idealized Behaviors	-.10	.74	.06	.84	.02	.94	.00	.99
Inspirational Motivation	.05	.87	.21	.50	.07	.82	.14	.64
Intellectual Stimulation	-.24	.43	-.04	.90	-.18	.56	-.13	.68
Individualized Consideration	-.21	.50	-.10	.74	-.28	.36	-.18	.57
Transactional Leadership								
Contingent Reward	.47	.11	.69	*.01	.52	.07	.62	*.02
Management-by-Exception (Active)	-.65	*.02	-.67	*.01	-.56	*.05	-.66	*.01
Passive/Avoidant								
Management-by-Exception (Passive)	-.05	.87	-.02	.95	-.15	.63	-.07	.82
Laissez Faire	-.12	.69	.31	.31	.15	.63	.19	.54
Outcomes of Leadership								
Extra Effort	.02	.96	-.06	.85	-.02	.95	-.01	.97
Effectiveness	-.17	.59	-.26	.39	-.06	.84	-.18	.56
Satisfaction	.12	.69	.18	.57	.06	.85	.13	.66

Note: *p<.05

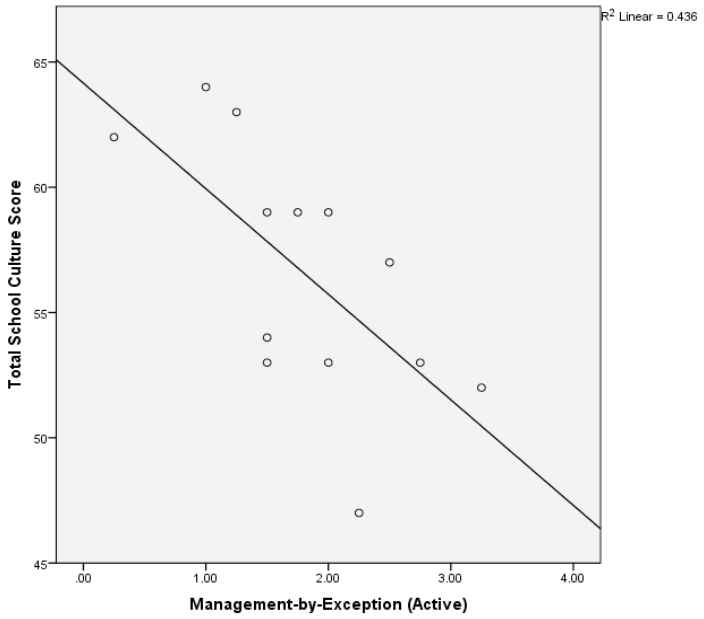


Figure 3. The relationship between self-reported transactional attributes of Management-by-Exception (Active) and teacher reports of school culture in a sample of Kentucky high schools.

Hypothesis 2: Leadership style is related to collective teacher efficacy.

To test this hypothesis, the scores on the MLQ 5x-short form were first averaged to yield summary scores to represent transformational leadership, transactional leadership, and passive/avoidant leadership. Each of the summary scores was then correlated with the total score on the Collective Efficacy Scale. Pearson product-moment correlations indicated that neither type of leadership had significant impact upon collective teacher efficacy in this sample.

To test whether individual leadership attributes or behaviors had an impact upon teacher efficacy, the individual attribute scores on the MLQ 5x-short form were correlated with the average score on the Collective Efficacy Scale per school by a

Pearson product-moment correlation coefficient. Results representing these correlations are presented in Table 4.

Table 4

Correlations Between Leadership Characteristics and Outcomes on the MLQ 5x-Short Form and Collective Teacher Efficacy

N = 13	r	Significance
Transformational Leadership		
Idealized Attributes	.01	.96
Idealized Behaviors	-.08	.81
Inspirational Motivation	-.12	.69
Intellectual Stimulation	-.19	.54
Individualized Consideration	-.52	.07
Transactional Leadership		
Contingent Reward	.48	.10
Management-by-Exception (Active)	-.32	.28
Passive/Avoidant		
Management-by-Exception (Passive)	-.08	.78
Laissez Faire	.19	.53
Outcomes of Leadership		
Extra Effort	-.27	.37
Effectiveness	-.17	.58
Satisfaction	-.25	.40

Again, contrary to the proposed hypothesis, none of the attributes was correlated with collective teacher efficacy.

Hypothesis 3: Leadership style is related to student achievement.

To test this hypothesis, the summary scores on the MLQ 5x-short form representing transformational leadership, transactional leadership, and passive/avoidant leadership were first correlated with the academic achievement score as represent by the

difference between the 2010 and 2009 transition indices per school. Pearson product-moment correlations indicated that transformational leadership was associated with lower values of change in transition indices, $r = -.60$, $p = .03$, whereas transactional leadership, $r = -.49$, $p = .09$, and passive/avoidant leadership, $r = -.31$, $p = .31$, had no significant impact upon change in transition indices. The graph displaying the relationship between transformational leadership and student achievement as measured by differences between 2010 and 2009 transition indices are presented in Figure 4.

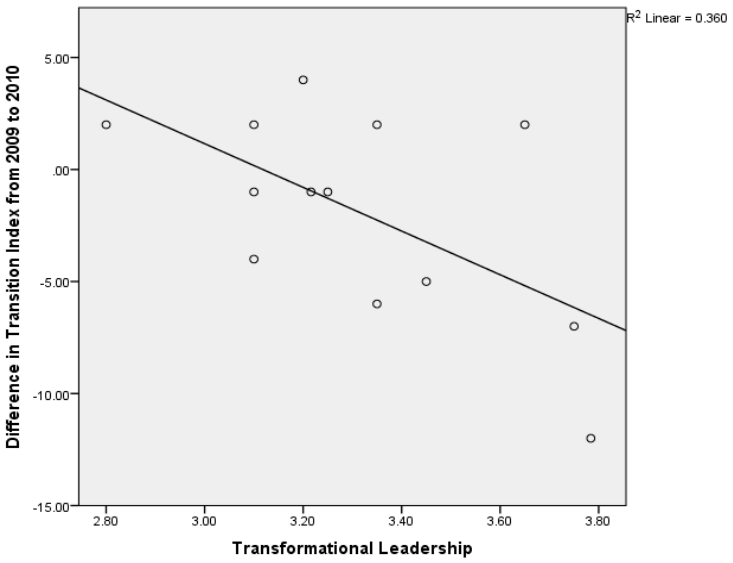


Figure 4. The relationship between transformational leadership and the difference in transition indices from 2009 to 2010.

To examine how specific attributes and behaviors from the MLQ 5x-short form were potentially related to student achievement, each individual behavior, attribute, and outcome score was correlated with the residual scores from 2009 to 2010 transition indices by school. Results representing these correlations are presented in Table 5.

Table 5

Correlations Between Leadership Characteristics and Outcomes on the MLQ 5x-Short Form and Academic Achievement

N = 13	r	Significance
Transformational Leadership		
Idealized Attributes	-.07	.83
Idealized Behaviors	-.41	.17
Inspirational Motivation	-.48	.10
Intellectual Stimulation	-.65	*.02
Individualized Consideration	-.68	*.01
Transactional Leadership		
Contingent Reward	.18	.57
Management-by-Exception (Active)	-.69	*.01
Passive/Avoidant		
Management-by-Exception (Passive)	-.31	.30
Laissez Faire	-.18	.55
Outcomes of Leadership		
Extra Effort	-.31	.31
Effectiveness	-.37	.21
Satisfaction	-.22	.47

Note: *p < .05

The results indicated that the transformational attributes of intellectual stimulation and individualized consideration were both negatively related to student achievement and that the transactional attribute of management-by-exception (active) was also negatively related to student achievement. The graphs displaying the relationships between specific attributes of transformational and transactional leadership and student achievement as measured by differences between 2010 and 2009 transition indices are presented in Figure 5, Figure 6, and Figure 7.

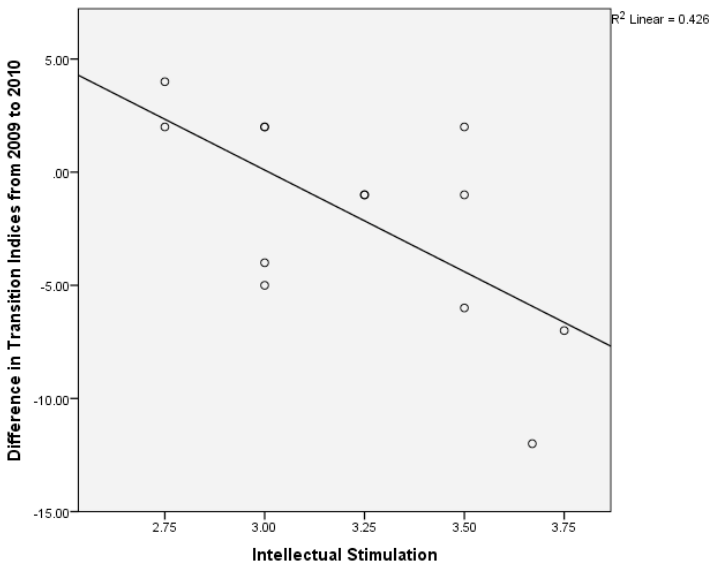


Figure 5. The relationship between the transformational characteristic of intellectual stimulation and the difference in transition indices from 2009 to 2010.

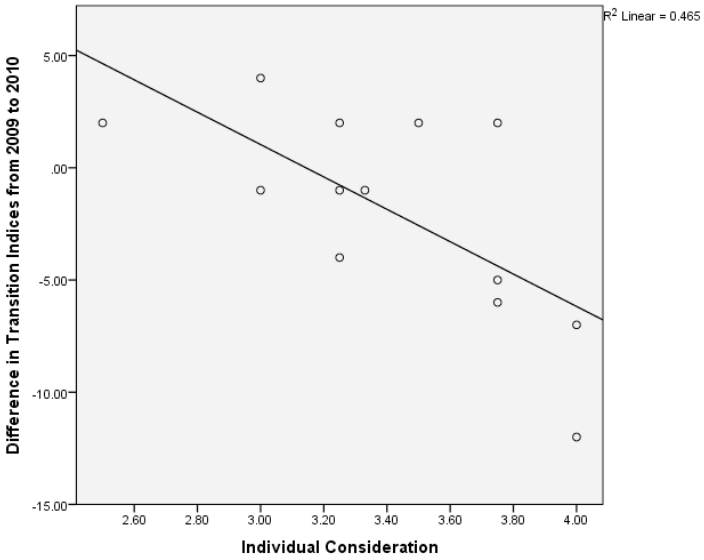


Figure 6. The relationship between the transformational characteristic of individual consideration and the difference in transition indices from 2009 to 2010.

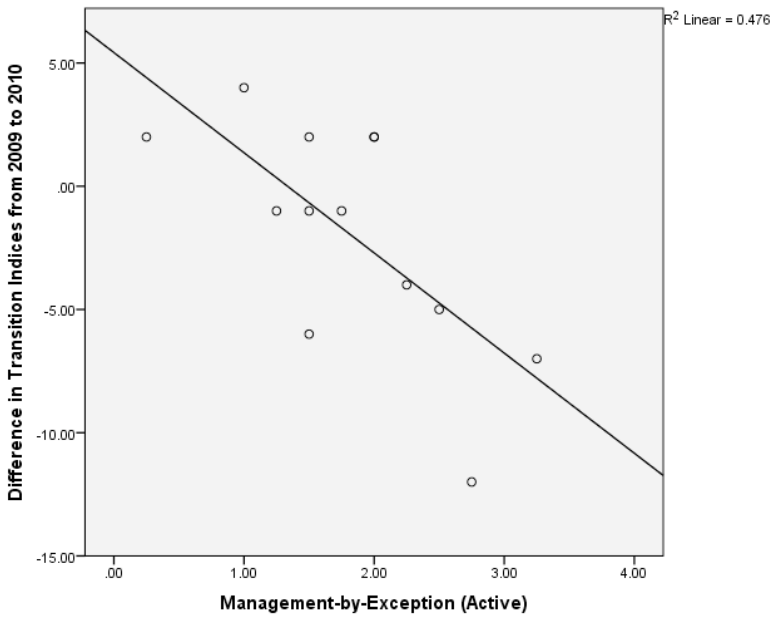


Figure 7. The relationship between the transactional characteristic of management-by-exception (active) and the difference in transition indices from 2009 to 2010.

Research Question Two: To What Degree do School Culture, Teacher Efficacy, and Socioeconomic Status Account for Variance in the Relationship Between Leadership Style and Student Achievement?

Hypothesis 1: Both leadership style and school culture are predictors of student achievement.

To test this hypothesis, the scores School Culture Triage Inventory were correlated with the residual scores from the 2009 to 2010 transition indices. Then the scores from the MLQ 5x-short form were entered into a step-wise multiple regression model with scores on the School Culture Triage Inventory to determine statistical significance and how much variance each contributed to the model predicting the difference in 2009 and 2010 transition indices.

In examination of the relationship between school culture and student achievement, the total score on the School Culture Triage Inventory and two of the

subscale scores, Professional Collaboration and Self-Determination/Efficacy, were found to be related to higher changes in the transition index from 2009 to 2010; however, the third subscale score, Affilliative Collegiality, did not achieve an adequate level of significance for this sample. Results from the School Culture Triage Inventory and its relationship to student achievement were presented in Table 6.

Table 6

Correlations Between School Culture and Academic Achievement

N=13	M (SD)	r	Significance
School Culture Total Score	56.5(5.0)	.55	*.05
Professional Collaboration	16.9(1.4)	.57	*.04
Affilliative Collegiality	19.4(2.2)	.49	.09
Self-Determination/ Efficacy	20.3(1.8)	.56	*.05

Note: *p < .05

When the two variables representing transformational leadership and school culture were entered into the stepwise regression model, both variables were retained as significant predicators of student achievement with transformational leadership accounting for 36% of the variance. Since school culture has historically produced more evidence of relation to student achievement in literature than transformational leadership, the school culture was entered into Step 1 of the multiple regression and then the variable representing transformational leadership was entered into Step 2 and examined using the stepwise procedure. Analysis of this model indicated that both variables retained in the regression as significant predictors with school culture accounting for 30.4% of the

variance in Step 1, $F = 4.81$, $p = .05$, and then transformational leadership accounting for another 34.9% of the variance in Step 2, $F = 9.39$, $p = .01$. The results for the stepwise regression with school culture and transformational leadership as predictors were presented in Table 7.

Table 7

Multiple Regression Statistics and Significance by Step in the Relationship Between Transformational Leadership, School Culture and Student Achievement

N=13		*B*	SE *b*	Significance
Step 1				
	Constant	30.73	13.18	
	School Culture	.51	.23	*.05
Step 2				
	Constant	1.63	14.14	
	School Culture	.51	.17	*.02
	Transformational Leadership	-9.59	3.03	*.01

Note: *p < .05

To examine what specific behaviors or attributes of transformational leadership, in addition to school culture, were predictors of student achievement, the total score on the School Culture Survey was again entered into a multiple linear regression model in Step 1, and then the individual scores representing Idealized Attributes, Idealized Behaviors, Inspirational Motivation, Intellectual Stimulation, and Individual Consideration were entered into Step 2 to be explored by stepwise regression. Analysis indicated that school culture again accounted for 30.4% of the variance in Step 1, $F = 4.81$, $p = .05$, but the only transformational leadership attribute that was retained after Step 2 was Individual Consideration, $F = 9.61$, $p = .01$, accounting for an additional

35.4% of the variance in the model. The results for the stepwise regression with school culture and transformational leadership as predictors were presented in Table 8.

Table 8

Multiple Regression Statistics and Significance by Step in the Relationship Between Attributes and Behaviors of Transformational Leadership, School Culture and Student Achievement

N=13		*B*	SE *b*	Significance
Step 1				
	Constant	30.73	13.18	
	School Culture	.51	.23	*.05
Step 2				
	Constant	-3.41	12.90	
	School Culture	.41	.17	*.04
	Individual Consideration	-6.39	1.99	*.01

Note: *p < .05

When scores on the School Culture Triage Inventory were entered into multiple regression in Step 1 and scores representing transactional leadership were entered in Step 2 to be explored by stepwise regression, the model failed to reach statistical significance at Step 2. The same result was achieved when the scores representing passive/avoidant leadership were entered at Step 2. Thus, for this sample, transformational leadership was the only leadership style to be considered a predictor of student achievement in conjunction with school culture.

Hypothesis 2: Leadership style affects school's culture through collective teacher efficacy, which, in turn, affects student achievement.

To test this hypothesis, the scores on the MLQ 5x short form were entered into a multiple regression model with scores on the School Culture Triage Inventory and

Collective Efficacy Scale to determine how much variance each contributed to the model and whether the model reached a level of statistical significance with the two predictors. The model was also examined to see if collective teacher efficacy was a potential mediator in the model. Then, the path between school culture, teacher efficacy and student achievement was analyzed using a goodness of fit index with each variable's variance accounted for through structural equation modeling.

First, to examine the relationship between teacher efficacy and student achievement, the scores on the Collective Efficacy Scale were correlated with the score difference between the 2009 and 2010 transition indices per school. Analysis indicated that the two variables were not statistically significant for this sample, $r = .50$, $p = .09$. In addition, when the scores on the Collective Efficacy Scale were entered into Step 3 of a stepwise regression with the school culture variable at Step 1 and the transformational leadership variable at Step 2, the model again failed to reach significance at Step 3. However, when the scores on the Collective Efficacy Scale were entered along with the scores on the School Culture Triage Inventory into a multiple regression model at the same time, the results were still not significant, but the school culture variable also lost its significance level. This was an indicator that teacher efficacy could have been a possible mediator in the model.

To examine the possibility of teacher efficacy as a mediator in the relationship between school leadership and student achievement, the scores on the MLQ 5x-short form, the School Culture Triage Inventory, the Collective Efficacy Scale, and the difference between 2009 and 2010 transition indices were arranged in a models to be examined using AMOS and SPSS. The base model included a path from school

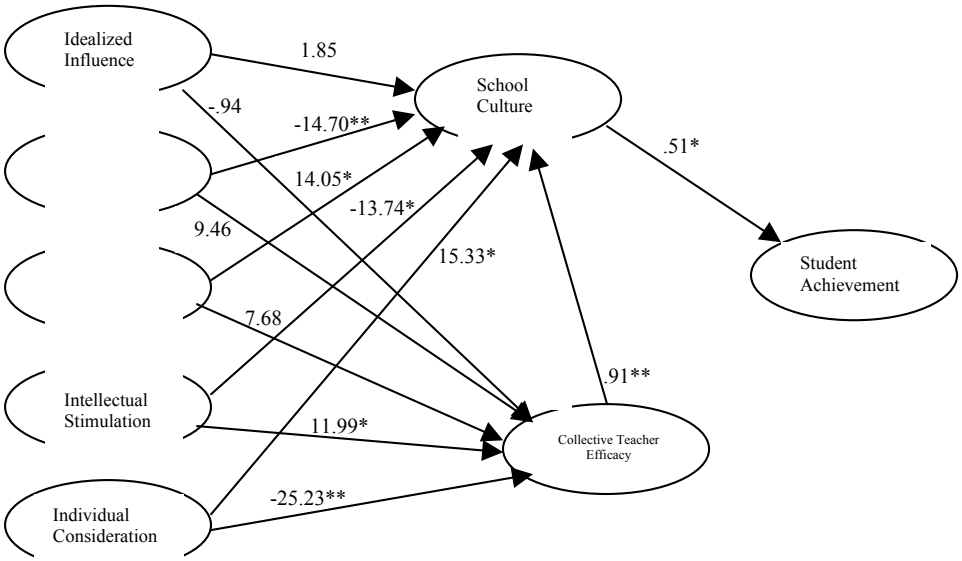
leadership to school culture to student achievement. Two potential base models were tested: the first with the summary score of transformational leadership as the predictor. The second utilized all the attributes and behaviors of transformational leadership as predictors. After a base model was selected based upon goodness of fit, the additional variable was added to test for potential mediation. Goodness of fit was examined with the understanding that these models were exploratory and the sample size was small. With that in mind, CFI was used in addition to GFI because it takes smaller sample sizes into consideration. Results for the goodness of fit criteria were presented in Table 9.

Table 9

Goodness of Fit Statistics for Models Linking Transformational Leadership to Student Achievement

Model Number	Endogenous and Exogenous Variables	Chi-Square	GFI	CFI	RMSQ
1	Transformational Leadership -> School Culture -> Student Achievement	$\chi(5) = 8.333$ $p < .01$	.750	.243	.293
2	Transformational Leadership (individual attributes) -> School Culture -> Student Achievement	$\chi(5) = 11.135$ $p = .05$	.853	.859	.327
3	Transformational Leadership -> School Culture -> Student Achievement (Teacher Efficacy mediated)	$\chi(6) = 8.368$ $p = .02$	.799	.517	1.398
4	Transformational Leadership (individual attributes) -> School Culture -> Student Achievement (Teacher Efficacy mediated)	$\chi(6) = 11.487$ $p = .07$	.867	.91	.782

Of the four models tested, only Model 4, the one with teacher efficacy as a mediator with the five attributes of transformational leadership as predictors through school culture, met the goodness of fit criteria for chi square (non-significant) and CFI (.90 or above). Model 4 also produced eight of twelve statistically significant regression weights in the path analysis. A diagram of the model with regression weight were presented in Figure 8.



Fi lel linking behaviors and attitudes of transformational leadership to student ac hrough school culture mediated by collective teacher efficacy.

hesis 3: The relationship between leadership style, school culture, and student achievement was be mediated by higher levels of collective teacher efficacy regardless of the school's socioeconomic status (SES) level.

To test this hypothesis, SES level was measured by the approximate percentage of students per school who receive free and reduced lunch were first correlated with all predictor, mediator, and outcome variables to examine potential relationships. The

variable was then added into a model to be examined for goodness of fit by path analysis along with scores on the MLQ 5x-short form, average school scores on the School Culture Triage Inventory, average school scores on the Collective Efficacy Scale, and difference in scores from the 2009 to 2010 transition indices.

Pearson product-moment correlations with values of significance were presented in Table 10.

Table 10

Correlations Between SES as Measured by Difference in 2009 and 2010 Transition Indices and Predictor, Mediator, and Outcome Variables

N = 13	r	Significance
Transformational Leadership	.45	.22
Idealized Influence	.36	.23
Idealized Behavior	.18	.56
Inspirational Motivation	.38	.20
Intellectual Stimulation	.28	.35
Individual Consideration	.57	*.04
Transactional Leadership	.11	.72
Contingent Reward	.19	.54
Management by Exception (Active)	-.01	.99
Passive/Avoidant	.40	.18
Management by Exception (Passive)	.36	.22
Laissez Faire	.29	.33
School Culture	.20	.51
Professional Collaboration	.24	.44
Affilliative Collegiality	.24	.43
Self-Determination/Efficacy	-.03	.93
Teacher Efficacy	-.52	.07
Difference between 2009 and 2010 Transition Indices	-.33	.27

Note: $*p < .05$

When SES was added as a predictor of student achievement in Model 4, the only model that produced a potential goodness of fit, the revised model failed to meet goodness of fit criteria, $\chi(12) = 32.895$, $p < .01$, GFI = .756, CFI = .738, RMSQ = 11.043.

Summary of Results

The purpose of the study was 1) to examine the relationship between leadership style, school culture, teacher efficacy and student achievement and 2) to determine to what degree do school culture and collective teacher efficacy, and socioeconomic status account for variance in the relationship between leadership style and student achievement.

The results addressing Research Question #1 indicated that two attributes of transactional leadership were related to school culture, Contingent Reward and Management-by-Exception. Contingent Reward was related to a more positive school culture while Management-by-Exception (Active) was indicative of a more toxic school culture. The behaviors and attributes of transformational leadership were not related to school culture in this population, and none of the behaviors and attributes of a particular leadership style was related to teacher efficacy.

Furthermore, in the examination of the relationship between leadership style and student achievement, transformational leadership was associated with a decrease in student achievement while transactional leadership and passive/avoidant leadership exhibited non-significant effects upon student achievement.

Similar to previous research, the results addressing Research Question #2 indicated that school culture had a statistically significant impact upon student achievement with all three subscales and the total score on the School Culture Triage

Inventory being related to greater improvement on transition indices from 2009 to 2010. Furthermore, when school culture and leadership style were both entered into a multiple regression, the combination of the two factors accounted for 65.3% of variance in the relationship to student achievement, and, when teacher efficacy was entered into the model, the statistical significance was lost, indicating that teacher efficacy was a potential mediator in the relationship. Path analysis supported the theory of teacher efficacy as a mediator between transformational leadership style and student achievement through more positive school culture, but did not maintain statistical significance when socioeconomic status was entered into the model.

CHAPTER V: DISCUSSION

Summary of the Findings

The purpose of the study was 1) to examine the relationship between leadership style, school culture, teacher efficacy and student achievement and 2) to determine to what degree do school culture, collective teacher efficacy, and socioeconomic status account for variance in the relationship between leadership style and student achievement. The participants in the study included principals (N=13) from Kentucky public high schools and teachers (N=239) from the high schools whose principals chose to participate in the study.

The literature review included a description of administrator accountability in student achievement, a theoretical model linking leadership style to student achievement through teacher efficacy, leadership and student achievement, school culture and student achievement, teacher efficacy and student achievement, and socioeconomic status and student achievement. The study design was quasi-experimental utilizing correlational analyses, multiple regression, and path analysis to examine two primary research questions: "To what degree is leadership style related to school culture, teacher efficacy, and student achievement?" and "To what degree do school culture, teacher efficacy, and socioeconomic status account for variance in the relationship between leadership style and student achievement?"

The results addressing Research Question #1 indicated that two attributes of transactional leadership were related to school culture. Contingent Reward was related to a more positive school culture while Management-by-Exception (Active) was indicative of a more toxic school culture. The behaviors and attributes of transformational

leadership were not related to school culture in this population, and none of the behaviors and attributes of a particular leadership style was related to teacher efficacy. Furthermore, transformational leadership was associated with a decrease in student achievement while transactional leadership and passive/avoidant leadership exhibited non-significant effects upon student achievement.

The results addressing Research Question #2 indicated that school culture had a statistically significant impact upon student achievement with all three subscales and the total score on the School Culture Triage Inventory being related to greater improvement on transition indices from 2009 to 2010. Furthermore, when school culture and leadership style were both entered into a multiple regression, the combination of the two factors accounted for 65.4% of variance in the relationship to student achievement, and, when teacher efficacy was entered into the model, the statistical significance was lost, indicating that teacher efficacy was a potential mediator in the relationship. Path analysis supported the theory of teacher efficacy as a mediator between transformational leadership style and student achievement through more positive school culture.

One of the anticipated contributions of the study was to provide a better understanding of the dynamics strong transformational leaders instill in their schools regardless of the disadvantages they encounter. Though parts of the Ross and Gray model (2006) were replicated with teacher efficacy as a mediator between transformational leadership style and student achievement through school culture, the results did not hold when socioeconomic status was entered into the model.

Conclusions

Conclusions from the study have included the following observations:

1. Leadership style alone has produced a mixed picture in its relationship to student achievement.
2. School culture alone has had a significant impact upon student achievement.
3. The combination of a more positive school culture and greater levels of teacher efficacy can have a significant impact upon student achievement when school leaders have strong, transformational leadership characteristics.

Limitations

Results from the research study may have the following limitations:

1. The data was collected from the principals and teachers in the spring of 2011, whereas, the variable representing student achievement was obtained from transition indices for 2009 and 2010. A more timely data collection period would have included data collection from principals and teachers during the spring of 2010 or use of transition indices from 2010 and 2011.
2. The study included a small sample of schools (N=13), producing a smaller degree of statistical power in the analyses. Many superintendent and principal respondents who chose not to participate in the study indicated that they did not want to overwhelm their teachers with data collection during such a crucial time period of preparing for state testing. Others indicated that they were already conducting similar school culture assessments in their district or that their principal had not been in the leadership position long enough to fit the study inclusion criteria.
3. The student achievement data was assessed as a difference in transition indices from 2009 to 2010. The way transition indices were calculated changed during

that time period and was being changed after the 2011 testing period to include ACT scores and end-of-course assessments instead of Kentucky's Core Content Testing. In 2010, school leaders and teachers were attempting to juggle preparing students for KCCT and the ACT which produced lower increases in transition indices with only a net increase of 0.73 from 2009 to 2010 statewide as compared to an increase of 1.03 from 2008 to 2009 and 1.44 from 2007 to 2008.

4. The responses on the Multifactor Leadership Questionnaire 5x-short form were only self-reported. According to Mindgarden, the distributors of the MLQ, using only self-reported responses generates only a perception of leadership, not a true measure of leadership (http://www.mindgarden.com/faq.htm#whymultirater) which may have been produced by a more comprehensive assessment including multiple raters and interviews.
5. Data collection did not include specific information from teachers that could have provided additional information regarding experience level or degree of job satisfaction. These could have been included as controlling variables in the analysis.
6. Data from the teachers were only analyzed at the school level; thus, any individual teacher effects were not considered in the model nor as factors in the analyses.

Recommendations for Further Research

1) One of the anticipated contributions of the study was to provide a better understanding of the dynamics strong transformational leaders instill in their schools regardless of the disadvantages they encounter. Future research may

include a more in-depth study of leadership style in schools within specific areas of similar SES to determine other potential mediating factors to student success.

2) Another anticipated contribution of the study was to understand better how to assess and to train K-12 administrators in order to effect more productive change in school culture and teacher efficacy. Future research including all of these variables with a greater number of participants would be crucial in knowing how to validate, modify, or redesign current accountability models to meet the needs of administrators at all levels.

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APPENDIX A

PERMISSION LETTER TO USE THE MULTIFACTOR LEADERSHIP QUESTIONNAIRE

For use by Sheri McGuffin only. Received from Mind Garden, Inc. on March 29, 2010

mind garden

www.mindgarden.com

To whom it may concern,

This letter is to grant permission for the above named person to use the following copyright material;

Instrument: ***Multifactor Leadership Questionnaire***
Authors: ***Bruce Avolio and Bernard Bass***
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for his/her thesis research.

Five sample items from this instrument may be reproduced for inclusion in a proposal, thesis, or dissertation. The entire instrument may not be included or reproduced at any time in any other published material.

Sincerely,

Robert Most
Mind Garden, Inc.
www.mindgarden.com

APPENDIX B

SAMPLE ITEMS FROM THE MULTIFACTOR LEADERSHIP QUESTIONNAIRE-5X SHORT FORM

Five sample items rated using the following rating scale:

0 = Not at all 1= Once in a while 2 = Sometimes

3 = Fairly often 4 = Frequently, if not always

1.	I avoid getting involved when important issues arise.	1 2 3 4 5
2.	I seek differing perspectives when solving problems.	1 2 3 4 5
3.	I show that I'm a firm believer in "If it ain't broke, don't fix it."	1 2 3 4 5
4.	I help others to develop their strengths.	1 2 3 4 5
5.	I heighten others' desire to succeed.	1 2 3 4 5

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APPENDIX C

THE SCHOOL CULTURE TRIAGE SURVEY

Directions: Please circle a number to the right of each statement that most closely characterizes the practice in your school.

Rating: 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Often, 5 = Always or Almost Always

Professional Collaboration

1. Teachers and staff discuss instructional strategies and curriculum issues.	1	2	3	4	5
2. Teachers and staff work together to develop the school schedule.	1	2	3	4	5
3. Teachers and staff are involved in the decision-making process with regard to materials and resources.	1	2	3	4	5
4. The student behavior code is a result of collaboration and consensus among staff.	1	2	3	4	5
5. The planning and organizational time allotted to teachers and staff is used to plan as collective units/teams rather than as separate individuals.	1	2	3	4	5

Affilliative Collegiality

1. Teachers and staff tell stories of celebrations that support the school's values.	1	2	3	4	5
2. Teachers and staff visit/talk/meet outside of the school to enjoy each others' company.	1	2	3	4	5

3. Our school reflects a true “sense” of community.	1	2	3	4	5
4. Our school schedule reflects frequent communication opportunities for teachers and staff?	1	2	3	4	5
5. Our school supports and appreciates the sharing of new ideas by members of our school.	1	2	3	4	5
6. There is a rich and robust tradition of rituals and celebrations including holidays, special events, and recognition of goal attainment.	1	2	3	4	5

Self-Determination/Efficacy

1. When something is not working in our school, the faculty and staff predict and prevent rather than react and repair.	1	2	3	4	5
2. School members are interdependent and value each other.	1	2	3	4	5
3. Members of our school community seek alternatives to problems/issues rather than repeating what we have always done.	1	2	3	4	5
4. Members of our school community seek to define the problem/issue rather than blame others.	1	2	3	4	5
5. The school staff is empowered to make instructional decisions rather than waiting for supervisors to tell them what to do.	1	2	3	4	5

6. People work here because they enjoy and choose

to be here. 1 2 3 4 5

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APPENDIX D

THE COLLECTIVE EFFICACY SCALE

CE-Scale

Form L

Directions: Please indicate your level of agreement with each of the following statements about your school from **strongly disagree** to **strongly agree**. Your answers are confidential.

Strongly Disagree=1	**Disagree=2**	**Somewhat Disagree=3**
Somewhat Agree=4	**Agree=5**	**Strongly Agree=6**

1. Teachers in the school are able to get through to the most difficult students.
   1 2 3 4 5
2. Teachers here are confident they will be able to motivate their students.
   1 2 3 4 5
3. If a child doesn't want to learn teachers here give up.
   1 2 3 4 5
4. Teachers here don't have the skills needed to produce meaningful student learning.
   1 2 3 4 5
5. If a child doesn't learn something the first time teachers will try another way.
   1 2 3 4 5
6. Teachers in this school are skilled in various methods of teaching.
   1 2 3 4 5
7. Teachers here are well-prepared to teach the subjects they are assigned to teach.
   1 2 3 4 5
8. Teachers here fail to reach some students because of poor teaching methods.
   1 2 3 4 5
9. Teachers in this school have what it takes to get the children to learn.
   1 2 3 4 5
10. The lack of instructional materials and supplies makes teaching very difficult.
    1 2 3 4 5
11. Teachers in this school do not have the skills to deal with student disciplinary problems.
    1 2 3 4 5
12. Teachers in this school think there are some students that no one can reach.
    1 2 3 4 5
13. The quality of school facilities here really facilitates the teaching and learning process.
    1 2 3 4 5
14. The students here come in with so many advantages they are bound to learn.
    1 2 3 4 5
15. These students come to school ready to learn.
    1 2 3 4 5
16. Drugs and alcohol abuse in the community make learning difficult for students here.
    1 2 3 4 5
17. The opportunities in this community help ensure that these students will learn.

1 2 3 4 5

18. Students here just aren't motivated to learn.
    1 2 3 4 5
19. Learning is more difficult at this school because students are worried about their safety.
    1 2 3 4 5
20. Teachers here need more training to know how to deal with these students.
    1 2 3 4 5
21. Teachers in this school truly believe every child can learn.
    1 2 3 4 5

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APPENDIX E

LETTER TO SUPERINTENDENTS

Dear _____,

One or more of the high schools in your district has been selected to participate in a research study examining the potential effects of a principal's leadership style on student achievement. As part of the study, the principal of the high school will be asked to complete an online questionnaire to determine his/her leadership style, and the teachers of the school will be asked to complete online, anonymous questionnaires regarding the school's culture and how teachers feel they are able to contribute to students' success. If you and the school's principal choose to participate, this information will be examined in conjunction with the school's achievement results on the past two years of Kentucky's Core Content Test. The results from the leadership assessment and a cumulative summary of the teachers' responses will be made available to the school's principal in the summer of 2011.

Benefits:

One anticipated benefits of the study is the better understanding of how a school's leadership can inspire a school to succeed regardless of any disadvantages. Another benefit of the study may come in the knowledge of a school's strengths and weakness in school culture and how teachers feel that they contribute to their students' success.

Confidentiality:

If the chosen high school participates in the study, your employees' confidentiality will be maintained by keeping the data in a secure, protected file on the researcher's computer.

Refusal/Withdrawal:

You or the employees in your district may withdraw from the study at any time by either choosing to leave the online survey during data entry. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

I have included attached copies of the informed consent documents that will be included with the email letters to the school's principal and to its teachers. If you consent to your district's and the chosen school's involvement in the study, please provide your signature and date of consent on the lines below and fax or mail it to researcher. Contact information is provided.

Thanks in advance for your participation. Please contact me or my supervisor if you have any questions.

Investigator: Sheri Roberts McGuffin, Doctoral Candidate, Department of Educational Leadership, 1906 College Heights Blvd. #91030, Western Kentucky University, Bowling Green, Kentucky 42101-1030, sheri.mcguffin525@topper.wku.edu OR (502) 507-5210.

Supervised by: Christopher R. Wagner, Ph .D., Professor - Educational Administration, Leadership, and Research, TPH 425 - Western Kentucky University, 1906 College Heights Blvd. #41031, Bowling Green, KY 42101 OR (270) 745-4890.

_____ _____

Signature of Participant Date

_____ _____

Witness Date

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT

THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY

THE WESTERN KENTUCKY UNIVERSITY HUMAN SUBJECTS REVIEW BOARD

Paul Mooney, Compliance Coordinator

TELEPHONE: (270) 745-4652

APPENDIX F

LETTER TO PRINCIPALS

Project Title:
EXPLORING THE DIRECT AND INDIRECT EFFECTS BETWEEN SCHOOL LEADERSHIP AND STUDENT ACHIEVEMENT

Investigator: Sheri Roberts McGuffin, Doctoral Candidate, Department of Educational Leadership, 1906 College Heights Blvd. #91030, Western Kentucky University, Bowling Green, Kentucky 42101-1030, sheri.mcguffin525@topper.wku.edu OR (502) 507-5210. Fax: (502) 349-7017

You are being asked to participate in a project conducted through Western Kentucky University. The University requires that you give your signed agreement to participate in this project. If you choose to participate in the study your name will be entered into a drawing for one of **FOUR $100 GIFT CARDS**

Please read this explanation and email with the researcher any questions you may have. If you decide to participate in the project, please sign on the last page of this form and fax it to Sheri McGuffin at (502) 349-7017 or mail to the above address.

Purpose of the Study:

Since the passage of No Child Left Behind in 2001 and the national push for standards-based student achievement, K-12 administrators in the United States have been held to a higher level of accountability for student achievement in their schools. The purpose of this study is

1) to examine the relationship between leadership style, school culture, teacher efficacy and student achievement and 2) to determine to what degree do school culture and collective teacher efficacy, and socioeconomic status account for variability in the relationship between leadership style and student achievement.

Explanation of Procedures:

This email contains a link to an online survey about your school's demographics and your leadership style that should take approximately 10 minutes to complete. Once you click on the link, you may begin answering the questions. When you finish the survey, you will receive a similar email with a link to forward to your school's teachers. The teachers' surveys will provide information on your school's culture and collective teacher efficacy. Those who participate in the study will receive a summary of their individual results on the leadership questionnaire and a summary of his/her school's school culture and

collective teacher efficacy results. You have the choice to share these results with others but are not required to do so.

Discomfort and Risks:

There is minimal risk to those involved in the study. Your responses will only be known to you and the researcher. No individual school will be recognized as part of the study's results.

Benefits:

One anticipated benefit of the study is the better understanding your leadership style and how it can inspire your school to succeed regardless of its disadvantages. Another benefit of the study may come in the knowledge of your school's strengths and weakness in school culture and how your teachers feel that they contribute to their students' success.

Confidentiality:

If you choose to participate, your confidentiality will be maintained by keeping the data in a secure, protected file on the researcher's computer.

Refusal/Withdrawal:

You may withdraw from the study at any time by either choosing to leave the online survey during data entry or by sending an email or letter to the researcher. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty. *You understand also that it is not possible to identify all potential risks in an experimental procedure, and you believe that reasonable safeguards have been taken to minimize both the known and potential but unknown risks.*

_____ _____

Signature of Participant Date

_____ _____

Witness Date

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT

THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY

THE WESTERN KENTUCKY UNIVERSITY HUMAN SUBJECTS REVIEW BOARD

Paul Mooney, Compliance Coordinator

TELEPHONE: (270) 745-4652

APPENDIX G

LETTER TO TEACHERS

Project Title: **EXPLORING THE DIRECT AND INDIRECT EFFECTS BETWEEN SCHOOL LEADERSHIP AND STUDENT ACHIEVEMENT**

Investigator: Sheri Roberts McGuffin, Doctoral Candidate, Department of Educational Leadership, 1906 College Heights Blvd. #91030, Western Kentucky University, Bowling Green, Kentucky 42101-1030, sheri.mcguffin525@topper.wku.edu OR (502) 507-5210

Please read this explanation and contact with the researcher any questions you may have.

Purpose of the Study:

You are being asked to participate in a project conducted through Western Kentucky University that examines the relationships between your principal's leadership style, your school's culture, and your feelings about how you affect your students' ability to succeed.

Explanation of Procedures:

This email contains a link to an online survey about your school's culture and how you feel that you contribute to your students' achievement. The survey should take approximately 10 minutes to complete. Once you click on the link, you may begin answering the questions.

Discomfort and Risks:

There is minimal risk to those involved in the study. Your responses will only be known to you and, anonymously, to the researcher. No identifying information other than your school should be included.

Benefits:

One anticipated benefit of the study is the better understanding of transformational leadership and how it can inspire a school to succeed regardless of its disadvantages. Another benefit of the study may come in the knowledge of your school's strengths and weakness in school culture and how teachers feel that they contribute to their students' success.

Confidentiality:

If you choose to participate, your confidentiality will be maintained by keeping the data in a secure, protected file on the researcher's computer.

Refusal/Withdrawal:

Your continued cooperation with the research implies your informed consent; however, you may withdraw from the study at any time by leaving the online survey during data entry. Anyone who agrees to participate in this study is free to withdraw from the study at any time with no penalty.

THE DATED APPROVAL ON THIS CONSENT FORM INDICATES THAT

THIS PROJECT HAS BEEN REVIEWED AND APPROVED BY

THE WESTERN KENTUCKY UNIVERSITY HUMAN SUBJECTS REVIEW BOARD

Paul Mooney, Compliance Coordinator

TELEPHONE: (270) 745-4652

CURRICULUM VITAE

Sheri R. McGuffin
1009 Farmaway Drive
Bardstown, Kentucky 40004
502.507.5210
sheri.mcguffin@nelson.kyschools.us

EDUCATION

Western Kentucky University, Bowling Green, Kentucky ■ Anticipated Summer 2011
Ed.D. Educational Leadership, P-12 Administration Strand

University of Louisville, Louisville, Kentucky ■ 2006
M.A. Clinical Psychology

Western Kentucky University, Bowling Green, Kentucky ■ 2000
M.A.E. with a major in Mathematics

Western Kentucky University, Bowling Green, Kentucky ■ 1992
B.A. cum laude
Areas of Concentration: Mathematics, History, Computer Science, Education

WORK EXPERIENCE

- Independent Statistical Consultant
  (March 2008 – present)

  - Developed data analysis for nurse practitioner and health care administration students at Indiana Wesleyan University for Master's theses.

  - Consulted graduate students on written analyses and interpretation of data.

  - Individually worked with graduate students to interpret data analyses techniques for their coursework.

- Math & Computer Science Instructor
  Nelson County High School, Bardstown, Kentucky (July 1992 – June 2000, July 2004 - present)

  - Taught courses in algebra, geometry, advanced mathematics, dual-credit precalculus, programming in Pascal, C++, and Java at introductory and advanced placement levels.

  - Implemented "Adventures in Engineering," "Mathemanities," and "NUMB3RS" grants funded through the Nelson County Endowment Fund.

  - Developed curriculum for applied mathematics in algebra and geometry.

  - Trained teachers at the high school and middle school levels in applied mathematics techniques.

  - Served as assistant band director for three years.

  - Coached academic team to two consecutive Sweet Sixteen appearances.

- Adjunct Math Instructor
  Campbellsville University - Louisville campus (July 2007 – November 2007)

  - Taught advanced algebra to adult business student.ts in a six-session course by integrating traditional mathematics with current technology

- Graduate Therapist
  Supervised by Dr. Stanley Murrell and Dr. Tamara Newton, University of Louisville, Department of Psychological and Brain Sciences (August 2000 – August 2003)

  - Utilized cognitive-behavioral and interpersonal treatment methods to treat individuals with symptoms of post-traumatic stress disorder, anxiety disorders, depression, anger and adjustment difficulties.

  - Assessed adults and teens with symptoms of attention deficit hyperactivity disorder and learning disabilities.

  - Served as co-therapist for groups with adolescents and young adults dealing with grief, anger, and self-esteem.

- Graduate Teaching Assistant
  Supervised by Dr. Janet Woodruff-Borden, University of Louisville, Department of Psychological and Brain Sciences (August 2002 – July 2003)

  - Provided supervision and constructive comments to aid first and second year graduate students in learning effective interviewing skills.

  - Trained graduate students to use and to score cognitive assessment batteries including the Wechsler Adult Intelligence Scale (WAIS-III) and the Wechsler Intelligence Scale for Children (WISC-III).

- Clinic Assistant
  Supervised by Dr. Bernadette Walter, University of Louisville, Psychological Services Center (August 2002 – August 2003)

  - Completed intake interviews with clients with the purpose of gathering diagnostic information and to make recommendations for best fit in treatment options.

- Graduate Teaching Assistant
  Supervised by Dr. Paul DeMarco and Dr. Maureen McCall, University of Louisville, Department of Psychological and Brain Sciences (August 2000 – May 2001)

  - Taught 2-3 laboratory classes to supplement material from Psychology 201 lectures.

  - Maintained a course database with grades for all sections of the course.

- Group Therapist
  Children's Liver Alliance- Kentucky (August 1999-May 2001)

  - Co-led a support group for Kentucky families of children who have undergone liver transplants and those who are waiting for transplant of liver and small intestine.

  - Organized meetings with transplant surgeons and coordinators from the University of Kentucky Medical Center to answer families' health-related questions including post-transplant immunosuppression and body-image issues.

VOLUNTEER EXPERIENCE

- Board of Directors
  Bluegrass Christian Academy, Bardstown, Kentucky (November 2005 – present)

- Currently serving as vice-chair in 3nd elected term as member of the board of directors.

- Designated as chair for accreditation and personnel committees.

- Chair, Counseling Ministry
  Mill Creek Baptist Church, Bardstown, Kentucky (January 2006 – August 2007)

  - Developed a referral network for mental health services available to community members.

  - Worked with local physicians and ministers to establish collaborative efforts between churches in providing medical and pastoral counseling.

  - Worked with Southern Baptist Theological Seminary students to develop a working model for effective counseling in a church setting.

RESEARCH EXPERIENCE

- Consultant –
  Washington County Heartland Youth Prevention Center, Springfield, KY (June – July 2009)

  Designed and implemented a program evaluation of the center's data collection and evaluation techniques

  - Evaluated usage of drug and alcohol surveys with students and teachers in the Washington County School District.

  - Instructed employees on data organization, analysis, and presentation techniques.

- Researcher –
  Supervised by Dr. Jamie Studts
  University of Louisville School of Medicine (June 2001 – July 2003, Summer 2006 and Summer 2007)

  Examination of emotional versus rational appeals to obtain registration for bone marrow transplantation

  - Designed questionnaires with emotional versus rational appeals in addition to self-report demographic and psychological data.

  - Collected and analyzed appeal and pre-and post-questionnaire data on second-year medical students.

- Physiological Data Specialist –
  Supervised by Dr. Sandra Sephton, Dr. Paul Salmon, and Dr. Jamie Studts
  University of Louisville School of Medicine (June 2001 – July 2003)

  Stress management study with Fibromyalgia patients (June 2000-May 2002)
  Responsibilities included

  - Collected and analyzed electrophysiological sleep and salivary cortisol data on women with fibromyalgia at baseline and following an intervention utilizing a mindfulness-based stress reduction program.

  - Collaborated with neuropsychological research laboratory to collect evoked potential data on patients with fibromyalgia.

  - Trained new students to interview participants and to score and analyze sleep data.

  - Interviewed participants regarding use current and past levels of psychopathology.

  MBSR pilot study with Fibromyalgia patients (June 2000-May 2001)

  - Collected and analyzed data using the Nightcap, a home-based, sleep-monitoring device.

  - Entered data provided through self-report of participants

- Researcher and Student Therapist –
  Supervised by Dr. Stanley Murrell, University of Louisville, Department of Psychological and Brain Sciences (August 2000 – July 2003)

  - Participated in the development of a time-limited child interpersonal therapy protocol for use in the Psychological Services Center at the University of Louisville.

  - Collected self-report and observational data as a therapist and observer in a process and outcome study of a time-limited interpersonal therapy treatment package in the Psychological Services Center.

- Research Assistant –
  Supervised by Dr. Charlotte Manly, University of Louisville, Department of Psychological and Brain Sciences (August 2001 – May 2002)

- Aided in setting up a research laboratory and running subjects in a study designed to examine the relationships between strategy development and attentional focus during the process of acquiring new features in learning.

- Researched material and data acquisition needs to set up fMRI experiments with Parkinson's patients.

PAPER AND POSTER PRESENTATIONS

Ruberg, J., McGuffin, S., Roetzer, L.M., & Studts, J.L. (2005). Emotional vs. rational appeals for national marrow donor program registration: An experimental study. *Annals of Behavioral Medicine*, *24*(S), S048.

Salsman, N., McGuffin, S., & Murrell, S. (2002). The OQ-45 as a measure of symptom reduction in brief interpersonal therapy. Paper presented at the annual meeting of the American Psychological Association. Chicago, IL.

S. McGuffin, J. Studts, I. Weissbecker, K. Hoover, P. Banis, P. Salmon, and S. Sephton (2002). Emotional Neglect and Perceived Stress are Associated with Neuroendocrine Dysfunction in Women with Fibromyalgia. *Annals of Behavioral Medicine, 24*(S), S084. **(Winner, Best Visual Poster of Session)**

Weissbecker, A. Floyd, S. McGuffin, P. Salmon, P. Banis, and S. Sephton (2002). Repressive Defensiveness is Related to Physiological Symptoms in Women with Fibromyalgia. *Annals of Behavioral Medicine*, *24*(S), S012.
(Winner, Best Visual Poster of Session)

P. Salmon, I. Weissbecker, S. McGuffin, P.L. Banis, J. Studts, and S. Sephton (2002). Overweight is Associated with Pain, Physical Inactivity and Neuroendocrine Dysregulation in Women with Fibromyalgia. *Annals of Behavioral Medicine, 24*(S), S026.

Ulmer, I. Weissbecker, S. Sephton, J. Studts, P.L. Banis, S. McGuffin, K. Hoover, and P. Salmon, P. (2002). Demographic Factors Do Not Predict Participation, Adherence or Outcome in a Meditation-Based Stress Reduction (MBSR) Program for Women with Fibromyalgia. *Annals of Behavioral Medicine, 24*(S), S034.

Dedert, P. Banis, I. Weissbecker, J. Studts, P. Salmon, S. McGuffin, K. Hoover, C. Ulmer, S. Segerstrom, F. Dhabhar, and S. Sephton (2002). Spiritual Expression is Linked with Endocrine and Immune Function Among Women with Fibromyalgia. *Annals of Behavioral Medicine, 24*(S), S080.

S. McGuffin, S.E. Sephton, P. Salmon, A. Mackey, I. Weissbecker, and C. Callanan. Sleep Quality is Associated with Diurnal Cortisol Rhythms and Pain in Women with Fibromyalgia. *Annals of Behavioral Medicine* 23*(Supplement):6* (2001).

McGuffin, S., Salsman, N., & Murrell, S. (August 2001). The Working Alliance Over Three Stages of Interpersonal Therapy. Poster presented at the annual meeting of the American Psychological Association. San Francisco, CA.

PUBLICATIONS

J.L. Studts, Ruberg, JL Ruberg, S.A. McGuffin, and L.M. Roetzer. Decisions to register for the National Marrow Donor Program: rational vs emotional appeals, *Bone Marrow Transplantation*, 45, April 2010: 422-28.

R.C. Martin, S.A. McGuffin, L.M. Roetzer, T.D. Abell T.D., and J.L. Studts. Method of Presenting Oncology Treatment Outcomes Influences Patient Treatment Decision-Making in Metastatic Colorectal Cancer. *Annals of Surgical Oncology*, 13,1, January 2006.

S.E. Sephton, J. Studts, I. Weissbecker, G. Lynch, K. Hoover, I. Ho, S. McGuffin and P. Salmon. Biological and Psychological Factors Contributing to Memory Impairment in Fibromyalgia Syndrome. *Health Psychology, 6, November 2003: 592-7.*

AWARDS

Best Visual Poster (April 2002) – Poster Session C at the Annual Meeting of the Society for Behavioral Medicine.

Tandy Technology Scholars – Outstanding Teacher Award (1997)

Kentucky Teacher's Scholarship – Kentucky Higher Education Assistance Authority (1987-1992)

Regent's Scholarship – Western Kentucky University (1987-1989)

Valedictorian – Wayne County High School (1987)

Governor's Scholar (Kentucky) – (1986)

REFERENCES

Available upon request.