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Colorado Middle School Principals' Transformational Leadership Characteristics and Colorado's Standardized Test Scores

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Abstract

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MA, Colorado Christian University, 1999

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Researchers have documented that high expectations do not always result in higher achievement, but the reason for varying results has not been clearly understood. This correlational study was done to find out if the degree of presence of principal leadership characteristics can predict when high expectations are effective and when they are not. Expectancy and transformational leadership theories provided the framework for identifying 9 principal leadership characteristics that might influence student scores on Colorado statewide testing. Existing student testing data were considered the dependent variable, while survey data on the leadership behaviors of Colorado middle school principals were used for the independent variables. Data were tested using a correlational regression analysis. The transformational leadership independent variables of beneficial modeling, inspirational motivation, systems thinking, individualized consideration, and empowerment were each found to be significantly related to statewide test scores at the .05 level. The high expectations variable was not found to be significantly related to test scores by itself but was found to be significant ($p = .016$) when transformational leadership characteristics were also high. Principals who were perceived to provide teachers with the environment they needed to facilitate student achievement were correlated with higher test scores. Implications for social change include public policy makers' support for transformational educational leadership as a part of providing teachers with what they need in order to meet high expectations.

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My wife Kristine provided patience when that was needed and impatience when that was needed.

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Chapter 1: Introduction to the Study

Thousands of K-12 students in Colorado are among those across the nation who have not been meeting expectations for academic proficiency on standardized tests. National and Colorado educational policies place the onus on school principals for improving student scores on statewide standardized tests (U.S. Department of Education, 2010; Colorado SB 10-191, 2010). Researchers have found the transformational leadership style to be the style preferred by most principals, but there is a dearth of research to indicate what specific transformational leadership behaviors, or combination of behaviors, can predict higher student scores on standardized tests. The popular solution among educational policy makers and the public is to raise expectations. A poll by NORC and the Associated Press found the largest response to the question of what is the most serious problem facing schools today to be low expectations for student achievement (Tompson, Benz, & Agiesta, 2013). Race to the Top is indicative of federal and state policies that have set lofty goals. Research has shown that sometimes high expectations do not promote educational benefits (Tsiplakides & Keramida, 2010). However, there was a lack of research to indicate when high expectations are productive and when they are not. In contrast to the theory that high expectations are always appropriate, social learning theorists stress the importance of learners having success that will lead to self-efficacy and further success (Bandura, 2009). Social learning theory is compatible with transformational leadership theory in that both stress the importance of mentors modeling desired behaviors. This quantitative study was needed in order to provide research-based information to educational policy makers and educators on the appropriate use of high expectations along with other transformational leadership

behaviors. The appropriate use of transformational leadership behaviors could lead to more productive relationships between policy makers and educators, and may contribute to school climates that facilitate greater academic achievement and higher scores on statewide standardized tests. Students who have academic success would contribute to positive social change by using their talents to make a difference in the lives of others.

Chapter 1 opens with a discussion of national and Colorado state educational policy. Next, I discuss the contrast between the high expectations of the public and policy makers and student results on Colorado's standardized testing. I then address the need for a correlational study of school principals and student test scores while offering testable hypotheses to help answer the question of what can be done to improve Colorado standardized test scores. Next, I outline how I tested expectancy theory and transformational leadership. Then I discuss definitions, assumptions, limitations, scope, and delimitations. The chapter concludes with a discussion of the need to look deeper than averages to analyze possible effects of transformational leadership on standardized test scores in Colorado.

Background

Despite federal and state mandates to encourage schools to score higher on standards-based tests, results in Colorado have remained flat. After the No Child Left Behind Act of 2001 expired in 2007, education reforms were included in the American Recovery and Reinvestment Act of 2009. Those reforms became the foundation of the Obama administration's *A Blueprint for Reform* published by the U.S. Department of Education (ED) in 2010 along with a challenge for a "race to the top" in which US students would greatly improve in international testing scores.

In his 2014 State of the Union address, President Obama said that Race to the Top, with the help of governors from both parties, had helped raise expectations and results on standardized tests (Obama, 2014). In contrast, Croft, Roberts, and Stenhouse (2016) criticized reform efforts and said that educator morale and productivity were reduced to an all-time low. Student performance in Colorado has apparently neither matched the optimism of President Obama nor the pessimism of Croft et al. Instead, as Figure 1 shows, mean student performance remained flat in Colorado from 2008 through 2013.

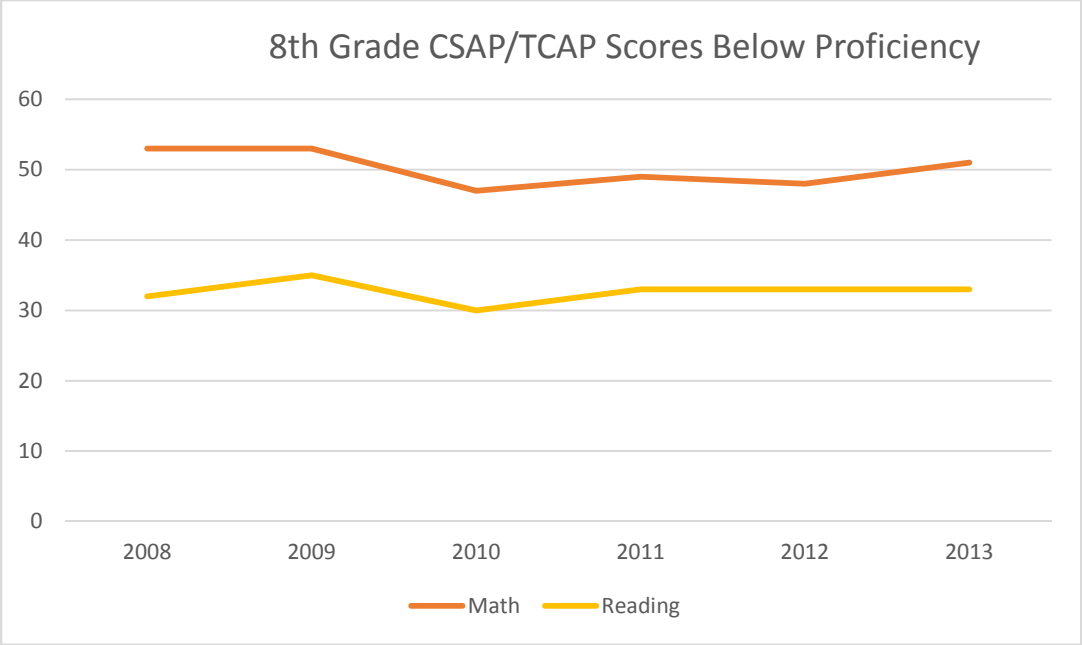

Figure 1. Eighth grade CSAP/TCAP scores below proficiency. *Note*. Based on data from the Colorado Department of Education.

I constructed Figure 1 using public data from the Colorado Department of Education website. Results on Colorado standardized testing from 2008 to 2013 showed the persistence of low educational achievement as demonstrated by mean average scores. The number of Colorado eighth-graders scoring below proficiency in reading hovered

around 50%, while the number of eighth-graders scoring below proficiency in math remained steady at a little over 30%. The call for a race to the top had apparently resulted in a jaunt on the plateau. If it truly is important to meet the lofty goals set by the president and Colorado governors, then policy makers and educators need to better understand what is needed to improve academic achievement and test scores.

The first goal in the Obama administration's strategy for improving student achievement was to improve teacher and principal effectiveness so that every classroom would have a great teacher and every school would have a great leader (ED, 2010). The first intervention listed to improve persistently low-scoring schools was to replace the principal (ED, 2010). One by one, states followed the lead of the federal government in educational policy. The General Assembly of the State of Colorado adopted Senate Bill 10-191 (2010), which required the establishment of an intensive system to evaluate the effectiveness of licensed educators throughout the state. The flat results, as shown in Figure 1, appear to indicate that there was little immediate impact on CMAS scores resulting from the attempt to make principals and teachers more accountable.

The standards and statewide academic testing adopted by states in the past two decades were an attempt to add objectivity and accountability to educational practice. The unintended consequence of pressure to meet accountability standards could be framing standards as more important than people, including educators and students. With the spotlight on test scores, principals may feel forced to use a more authoritarian approach to see that standards are met (Pepper, 2010). Recent leadership theory (Hickman, 2010) and research (Yang, 2014) indicated that a collaborative approach to leadership is more effective than an authoritarian approach in the long-term.

According to Onorato (2013), education sector researchers have not kept up with business sector researchers on transformational leadership. However, while Onorato's study helped to identify the prevalence of transformational leadership among educators, it did little to further an understanding of what specific transformational leadership behaviors are most effective. Valentine and Prater (2011) compared several leadership characteristics of Missouri school principals with results on Missouri's standardized tests. Their study helped to establish some external validity for earlier qualitative studies done by Jantzi and Leithwood (1996-2009). Valentine and Prater did not specifically address the question of when transformational leadership characteristics might facilitate high expectations and when they might not. A possible reason that results vary in regard to high expectations can be found in social learning theory. This theory holds that failure will lead to discouragement and more failure, whereas success will lead to self-efficacy and more success (Margolis & McCabe, 2003). An experimental study by Belle' (2013) on transformational leadership supported social learning theory predictions. Belle' concluded that giving public service employees the opportunity to work with individuals who benefitted from their efforts increased their motivation.

In a qualitative study, Pryce (2012) found attunement to mentee/student wants and needs supported productive relationships and therefore supported the effectiveness of some transformational leadership behaviors. Recent literature on principal leadership behaviors provided the basis I used to compare those behaviors to standardized test scores. An investigation into the relationship of factors that could lead to a better understanding of an outcome is best addressed through a quantitative research project (Creswell, 2009). Thus, this practical quantitative research study was needed to provide

more information on the relationship of school principals' leadership behaviors with the results from the Colorado Measures of Academic Success (CMAS).

Statement of the Problem

The research problem was a lack of literature specifically addressing how state-wide standardized testing scores can be improved. As indicated by statewide standardized test results, Colorado educators were not meeting legislated expectations for student proficiency. Despite lofty educational goals set by the Bush and Obama administrations and echoed by Colorado Governors Owens, Ritter, and Hickenlooper, Colorado standards-based test scores have appeared to remain flat. If maintaining present test scores was the best that could be done, then there was no problem and politicians need not have wasted their breath. If better test scores are possible, then to the extent that improvement can be made, those who have a stake in Colorado education should seek to compare alternatives for what can be done and then align public policy with sound educational practices.

Since 2010, federal and state governments have placed an emphasis on improving principal effectiveness as a means to improve academic achievement (ED, 2010; Dolan, 2013). It is important for researchers to provide sound direction in ways that principals can improve their students' academic achievement. The popular proposition that higher expectations are all that is needed has been brought into question by the results of Valentine and Prater's (2011) research which showed that complex principal behaviors are correlated with standardized test scores. Qualitative studies have shown that educational leaders who are successful at building relationships and shared goals are linked to school improvement on standardized tests (Leithwood, 2005). Conversely, it

would follow that those educational leaders who make demands and are weak in relationship building characteristics correlate with poor student achievement scores. This finding was supported by my research. Therefore, principals who are seeking to improve might be especially cognizant of their relationship building skills. Leithwood only looked at high performing schools, so it would be difficult to conclude what behaviors a principal should avoid based on those findings. In this study, I looked at the performance of all types of schools and have provided information on behaviors a principal should avoid.

Chapter 2 contains analysis of qualitative and quantitative studies related to leadership and student achievement. This study was driven by my contention that more analysis would help provide direction for policy makers and educators. Jantzi and Leithwood (1996) and Angelo (2005) sought to identify characteristics of high performing principals by analyzing those in high performing schools. Geddes (1990) cautioned researchers about conclusions drawn from only studying entities that have the characteristics the researcher is seeking as this could result in selection bias. By seeking data from the full spectrum of schools from high- to low-performing, I sought to contribute an added measure of objectivity, even though the sample size was small. The problem I addressed in this project was the lack of research comparing leadership behaviors with standardized test results. This study thus helps fill a gap in the existing literature so that policy makers, principal preparation institutions, and principals have additional research-based data upon which they can base decisions on what behaviors to maintain, avoid, or adopt in order to improve student achievement.

Purpose of the Study

The purpose of this quantitative study was to compare the degree of correlation among transformational leadership behaviors and results on Colorado standardized tests. More specifically, the objective of this statewide study was to test the thesis that other principal leadership factors, including relationship building, are more predictive of student achievement than high expectations. In some of the theoretical literature, researchers have associated relationship building with transformational leadership (Burns, 1978; Bass, 1998). I broke the thesis into testable hypotheses that are presented in the next section. These hypotheses were built upon variables that were increasingly defined as I developed this project.

The dependent variable was results for middle school students taking the CMAS for math in 2016. The CMAS was first administered in 2015. Prior to that the Transitional Colorado Assessment Program (TCAP) was used in 2012-2014. I have graphed TCAP results in Figure 1 and Figure 2. These are the only years that the TCAP was administered. It was a bridge between other Colorado standards-based tests. I collected open source CMAS data from the public portion of the Colorado Department of Education website. The large number of students involved in CMAS helped to assure objectivity for the study.

In addition to one dependent variable, I used several independent variables and co-variates for the study. In Chapter 2, I identify five transformational leadership characteristics including beneficial modeling, inspirational motivation, systems thinking, individualized consideration, and shared leadership. These transformational characteristics were at the heart of this research. Four non-transformational leadership

characteristics, including high expectations, managerial leadership, transactional leadership, and instructional leadership are also identified in Chapter 2 and underwent much of the same analysis as the transformational leadership behaviors in order to place high expectations and relationship building leadership in context. I used a set of three principal demographic factors for the study to help clarify further when the leadership factors may be most important. These included principal education level, principal experience, and principal gender. Five school-setting factors were identified which could help explain when high expectations, transformational leadership, and other leadership factors are most appropriate. These included socio-economic status, school size, school location, parental involvement, and community involvement. In the past, when statistical calculations were done by hand, such detailed comparisons would have been practically impossible; but with computer programs like SPSS now available, this study is feasible.

One of the things that can increase the validity of a correlative study is to include all the reasonable possible influences on the dependent variable (Field, 2013). This was my primary reason for including four non-transformational leadership characteristics and several co-variates in this study. Analyzing them all at one time was another contribution I made in this study. In the literature review, I discuss the sources I used to identify each of the eight covariates.

Research Question and Hypotheses

The following research question guided the study: To what extent, if any, is there a correlation between nine principal leadership variables and the results on the participating middle schools' CMAS 2016 math scores? I found that there are other principal leadership behaviors that have a greater impact on standardized test scores than

high expectations. Based on what I found in the literature review, I decided to study nine principal leadership variables, including the five transformational leadership variables of beneficial modeling, inspirational motivation, systems thinking, individualized consideration, and shared leadership, and the four non-transformational leadership variables of managerial leadership, instructional leadership, transactional leadership, and high expectations.

I divided the thesis into the following testable hypotheses:

$H_0$1: High expectations will be more highly correlated with CMAS scores than any other leadership factor including beneficial modeling, inspirational motivation, systems thinking, individualized consideration, shared leadership, managerial leadership, instructional leadership, and transactional leadership.

H_A1: At least one other leadership variable including beneficial modeling, inspirational motivation, systems thinking, individualized consideration, shared leadership, managerial leadership, instructional leadership, and transactional leadership will be more highly correlated with CMAS scores than high expectations.

$H_0$2: Regression analysis will not correlate transformational leadership characteristics as together influencing CMAS scores.

H_A2: Regression analysis will correlate transformational leadership characteristics as together influencing CMAS scores.

$H_0$3: High expectations will be highly correlated with CMAS scores regardless of the relative presence or absence of individualized consideration.

H_A3: High expectations will be more negatively correlated with CMAS scores when individualized consideration is lowest and more positively correlated with CMAS scores when individualized consideration is highest.

$H_0 4$: As the covariates of student socio-economic status, school size, school location, principal education, principal experience, principal gender, parental involvement, and community involvement are introduced into SPSS calculations, independent variables will no longer continue to be correlated with CMAS, while high expectations will continue to show the highest correlation with CMAS.

$H_A 4$: As the covariates of student socio-economic status, school size, school location, principal education, principal experience, principal gender, parental involvement, and community involvement are introduced into SPSS calculations, independent variables will continue to show correlation with CMAS scores, with at least one other leadership factor showing a greater correlation than high expectations.

$H_0 5$: The statewide correlations of independent variables and covariates will not help to explain the three-year trends of CMAS scores of 12 randomly selected schools for the study.

$H_A 5$: The statewide correlations of independent variables and covariates will help to explain the three-year trends of 12 randomly selected schools for the study.

In order to test these hypotheses, I gathered secondary data from the Colorado Department of Education (CDE) website and from principal questionnaires. Data was then analyzed using SPSS and correlational statistical processes. The CDE website contains public information on results from the CMAS. The CMAS is Colorado's

standards-based assessment designed by the CDE to provide a picture of student performance to educators, parents, and the community.

Data on leadership characteristic independent variables was collected using a survey that blended the two surveys used by Valentine and Prater (2011). One of the surveys, the Audit of Principal Effectiveness, was developed by Valentine and Bowman (1989). The other was The Principal Leadership Questionnaire developed by Jantzi and Leithwood (1996). The revised survey is in Appendix A, and the permission letters to use the surveys are in Appendix B.

The covariate data was mostly demographics I gathered from the CDE website, while other information was gathered from a principal questionnaire that is included as Appendix D. I tested the covariate data gathered from CDE and principals to see how much predictive power they had on CMAS math scores as compared to the predictive power of principal leadership characteristics on CMAS math scores.

Theoretical Foundation for the Study

My thesis was that the relationship building behaviors of transformational leaders will correspond to productive use of high expectations, with that combination correlating to higher standardized test scores. This thesis comes from a blending of three theories: expectancy theory, social cognitive theory, and transformational leadership theory. The popular idea that high expectations encourage academic achievement could be considered a part of expectancy theory. One aspect of expectancy theory that is supported by social cognitive theory is the importance of success. However, expectancy theory, as expressed in the proposition of high expectations alone, does not appear to account for the negative impact of persistent failure. An important concept in social cognitive theory is self-

efficacy, which is the observation that, as people succeed, they gain confidence to be successful in other endeavors. If success is key to greater success, then a leader's ability to discern the needs of the follower and how to generate mutual goals that lead to success is of key importance. The relationship building characteristics of transformational leadership theory likely facilitate the development of self-efficacy. Support for the hypotheses of this study can be found in transformational leadership theory. Conversely, positive results from this study support transformational leadership theory. The theoretical foundation for this study in regard to transformational leadership begins with the work of Burns (1978) and follows the concept through the work of Bass (1987, 1998) and Leithwood (2004, 2009).

Burns (1978) used the word transforming, rather than transformational, to identify an important type of leadership that is to be distinguished from transactional leadership. The relations of many leaders and followers are transactional, meaning they exchange one thing for another such as wages for work (Burns, 1978). Educational examples would include the exchange of grades for conscientious work on lessons and paychecks for fulfilling the duties of teaching positions. In the preferred type of leadership identified by Burns, the transforming leader seeks to identify and meet the higher needs of the follower and not just the physical needs. The transforming relationship is one where both leader and follower advance (Burns, 1978). The only morally legitimate acts of leaders are those that help release human potential (Burns, 1978).

Building on the work of Burns, Bass (1987) said that transformational leaders move beyond self-interests based on contingent reward. Bass used the word transformational rather than transforming and took Burns' theory of leadership further by

describing components of transformational leadership. According to Bass, the transformational leader is charismatic, inspirational, intellectually stimulating, and individually considerate (Bass, 1987). While these four categories provide some clarity as to what transformational means, even more specific categories would be helpful for improving testing. Jantzi and Leithwood (1996) developed survey items from Bass' leadership factors to understand teachers' views of principals' effectiveness. The results of their work have enabled researchers to better assess the degree to which principals exhibit transformational leadership (Valentine & Prater, 2011). In addition to using Jantzi and Leithwood's (1996) survey on transformational leadership factors, Valentine and Prater (2011) used a survey developed by Valentine and Bowman (1989) to assess managerial and instructional leadership factors. I briefly describe these non-transformational leadership factors in the definitions section of this chapter, and more fully in Chapter 2; survey items are discussed in Chapter 3.

Bandura's theory of learning helps to explain why transformational leadership is effective. Bandura (1977) placed more emphasis on the power of intrinsic rewards than on the power of extrinsic rewards. This was in contrast to Skinner (1971) who argued that what goes on inside a person is of little consequence. People and animals can be conditioned to behave in certain ways by managing the mechanisms by which they are rewarded (Skinner, 1971). The Skinnerian view of learning appears to compliment the transactional view of leadership, whereas Bandura's theory of learning appears to compliment the transformational theory of leadership. Bandura (2009) emphasized the importance of modeling. Strong emotional bonding is also a factor in learning (Bandura,

2009). Struggling learners will gain motivation as caring mentors assist them to achieve success (Margolis & McCabe, 2003).

In order to answer the research question regarding the degree of correlation between nine principal characteristics and CMAS the approach to this study was to test the idea that the effectiveness of high expectations is dependent on the presence or absence of transformational leadership characteristics to explain when high expectations are appropriate and when they are not. Transformational leadership theory can be used to help explain why some principal behaviors like relationship building are more important than other principal behaviors such as setting high expectations.

Nature of the Study

Researchers have conducted several times more qualitative studies than quantitative studies in education even though policy makers seem to pay more attention to quantitative studies. This limited number of studies coupled with policy makers' preference for quantitative studies compelled me to undertake this study. I determined that finding the relative relationships of numerous predictive variables would fill a concerning gap in the literature and that a correlational design would be best to this end.

I collected data for the dependent variable of results on standardized test scores from the Colorado Department of Education (CDE) website. Data on the five transformational leadership behaviors and four other leadership behaviors were collected using a survey. Demographic data on principals and some data on school environment were collected via a simple questionnaire. Other school data were collected from the CDE website. I used scaterplots, the Pearson correlation with associated tests for

significance and multiple regression. in order to establish if there are correlations in the data.

Operational Definitions

Academic achievement: The extent to which educational goals are reached. In this study, achievement was measured using the 2016 CMAS math scores.

Attunement: The ability to empathize, understand, and relate to others (Pryce, 2012).

Individualized consideration: A term defined by Leithwood and Jantzi (1997) as behavior on the part of the leader that shows respect and concern for the personal feelings and needs of others.

Instructional leadership: Using professional training to closely supervise classroom instruction, coordinate the school's curriculum, and monitor student progress (Klinginsmith, 2007).

Managerial leadership: In the context of education, a subset of leadership that includes monitoring operations, planning, budgeting, seeing that teachers have necessary instructional resources, setting schedules, and establishing rules (Prater, 2004).

Mentoring: The impartation of some knowledge, skill, or character trait to a mentee either in private meetings or in a group setting where a leader can influence several individuals at the same time (Herrera, Vang & Gale, 2002).

Transactional leadership: The practice of providing rewards to followers in exchange for desired behaviors (Burns, 1978). Transactional leadership is one of nine leadership factors identified in this study. The other eight include managerial leadership,

instructional leadership, high expectations, and five aspects of transformational leadership.

Transformational leadership: The practice of working with followers to help them attain mutually agreed upon goals, knowledge, skills, needs, and behaviors (Burns, 1978). In this study, transformational leadership includes the five categories of beneficial modeling, inspirational motivation, systems thinking, individualized consideration, and shared leadership.

Assumptions, Limitations, Scope, and Delimitations

Quantitative statistical methods are based on assumptions that must be met in order for the results to be valid. Statistical procedures must match the characteristics of the dependent and independent variables (Creswell, 2009). In order to use many of the statistical procedures, the dependent variable must be continuous, as opposed to being categorical. The dependent variable in this study was scores from the CMAS. CMAS scores are reported by the CDE in percentages so that the dependent variable is not only continuous, but scores could also be considered interval, which is the highest and most useful category of continuous data.

Another assumption is that the sample is representative of the population. The use of a large proportion of a large population eases concerns over the fair representation of the data (Field, 2013). Statewide tests were scored for more than 43,000 8th graders taking the CMAS math assessment in 2016 contributing to its reliability. My use of CMAS scores ensured that the dependent variable of CMAS scores was representative and reliable for each school, since each school had a high participation rate.

The purpose of statistical procedures is to evaluate hypotheses. It is more difficult to prove a hypothesis than to reject one. Therefore, researchers make a null hypothesis that is the opposite of the research hypothesis. If the null hypothesis is rejected, the research hypothesis can be accepted. The rejection of a true hypothesis is a Type I error. The acceptance of a false hypothesis is a Type II error. The probability of making a Type I error is defined as the level of significance (Frankfort-Nachmais & Nachmais, 2008). A researcher setting a .05 level of significance will probably reject 5% of true hypotheses. It is acceptable and common for the level of significance to be set at .05, so that was the level I set for this research. If the significance level was less than .05 for any of the five hypotheses, the respective null hypotheses might have been rejected and the research hypotheses accepted. If the significance level was found to be more than .05, the null hypothesis would have been accepted and the research hypothesis rejected.

To have a feasible project, the researcher must manage the scope of the study. A limitation that seemed necessary to complete this research project was to limit it to one state. I selected Colorado because state test records are conveniently located, which reduced research costs. The Colorado population does not appear to have any characteristics that would have unduly biased the project. Comparing results to those of a similar middle grades study in another state, such as that of Klinginsmith (2007), could also increase external validity. If other researchers will perform similar studies in other states, the results will be more generalizable. If similar results are found in elementary schools, middle schools, and high schools, generalizability will be increased even further.

Proving that standardized tests are the best means to demonstrate student achievement was not a proposed goal of this research project. In the classroom, a teacher

may more quickly and more accurately assess a student's academic level by working with them than by knowing their standardized test scores. However, for purposes of objectively discerning general trends, test scores can be more useful than teacher observations. The introductory comments by the president and Colorado governors show that standardized test results have become politically and socially important in themselves. Haptonstall (2010) found a positive relationship between Colorado standardized test scores and teacher assessments of academic achievement. Improving test scores correspond to at least some academic achievement. Whether or not standardized tests are the best measure for the classroom, they are objective and important to policy makers and the public.

It was also beyond the scope of this study to make a distinction between the effects of transformational leadership on students in different grade levels. More definitive results need to be found for any of the grades before comparisons can be made. Even though developmental psychologists have noted differences in age groups, it was beyond the scope of this study to try to apply those differences to possible differences in the effects of transformational leadership. My plan for this project was to work within the limitation of one age group and to accept the accompanying limitation of the validity of this particular study. However, results from this study could be compared with those from Ergle (2012), Angelo (2005), Klinginsmith (2005) and Prater (2005) to see if there is any general agreement that would extend the validity of the studies. Ergle studied elementary principals, Angelo and Klinginsmith studied middle schools, and Prater studied high schools. If there are any similarities, then researchers could conduct further studies to make refinements in effects according to age. Using the CMAS instruments somewhat

limits the ages that can be studied. CMAS was administered to grades 3-10 in 2015 and 2016.

A gap in the literature I explained earlier in the chapter was a lack of externally valid studies on the relationship of transformational leadership with academic achievement—not that there is an abundance of any studies on the subject. A correlational study could provide that external validity if its findings were statistically significant. Statistical significance does not dictate whether a positive relationship exists or not. If statistical significance and a positive relationship are found, then it is highly likely that the relationship is indeed positive. If the relationship is found in a large sample, there is a high degree of external validity. In planning this study to obtain the best chance at external validity, internal validity had to be sacrificed, because of the nature of external and internal validity. It is generally not practical to have control (internal validity) with a large number of people (external validity),

There was a desire on my part to support the thesis, which may have introduced bias into the study. A study is only of value if it is done objectively so that a person with an antithetical view would have the same results. Some of the features of this study that helped reduce bias were my use of CDE data for the dependent variable, my use of an established survey for the independent leadership variables, and my use of simple data for the covariates. I made several statistical analyses and reported all relevant results so that there would not be an appearance that only favorable results were reported.

Planning a practical test of the hypotheses meant limitations to the validity of the argument. For an externally valid statistically significant finding to be made in a correlational study of several variables, a large sample is preferred. With large numbers

that cannot be controlled, the resulting study would be weak on internal validity. However, this correlational study had the potential of expanding the external validity of the internally valid studies on which I based the concepts of this study. The statistical analysis of the data in large part determined the degree to which the study was generalizable (Field, 2013). As the statistical test assumptions were met and statistical significances were found along with high correlations, then results could be generalized.

Significance of the Study

Even without the pressure of legislated academic achievement standards, it is important to provide the best educational environment for all youth. Researchers in juvenile studies have discussed the cost to lives filled with failure and disappointment. For example, Larose and Tarabulsy (2014) noted that school dropout has been associated with receiving social aid, being involved in illegal activities, physical health problems, mental health problems, and becoming parents of children who are more likely to drop out. An increase in educational attainment leads to higher market earnings, a decrease in the costs of criminal activity and social welfare dependency, and an increase in service to the community (Perez-Arce, Constant, Loughran, & Karoly, 2012). According to Bandura (2007), success in one area, such as education, leads to self-efficacy and success in other areas, such as employment. Several studies in the literature review together indicated that transformational leadership factors appear to have the potential of helping children to achieve more academically, which will lead to more opportunities for them. As children enter the adult world, they can be better prepared to make significant social contributions.

I conducted this study because it would either validate the popular emphasis on high expectations or it would point to a need to marshal resources commensurate with meeting those expectations. My study brought to light the negative effects of a lack of productive behaviors. This quantitative study could help verify that those characteristics discovered in qualitative studies can be used to predict success or failure on statewide standardized testing.

Summary

This correlational study helped fill a gap in the literature by extending research on the possible benefit of principals' use of transformational leadership factors as they relate to student achievement on statewide standardized test scores. Knowledge from this study could help principals use more effective practices in developing successful schools. Even if the results are only valid for some Colorado middle schools, a substantial population is involved. The sample was found to be representative of the population so the results can be used by educators to consider what principal characteristics have the most influence on standardized testing.

If transformational leadership characteristics continue to be found to contribute to the productivity of followers, then there are also implications for legislators. It is important not to convey an adversarial and imposing attitude toward educators if the hope is to give them incentive to help students. In 2009, governors and state commissioners of education from 48 states launched an effort to develop Common Core State Standards (Corestandards, 2014). Coupled with legislated accountability, on the face of it, educators had a reason to feel disrespected. Perhaps they are just robots who are supposed to fill student robots with the proper measure of mandated knowledge.

There is a human response to want to reject the whole high stakes testing/common core standards/imposing evaluation system. A random sample of 1,000 Colorado teachers noted that aligning their curriculum with Colorado standards had improved instruction. However, attention to Colorado testing had lowered faculty morale (Taylor, Shepard, Kinner, & Rosenthal, 2003). Dewey (2010a) was in agreement with the importance of teachers being able to empathize with students, but he also recognized an importance in having a curriculum. In order to make the necessary standards palatable, educational leaders must make an extra effort to overcome their innate dehumanization. Then standards can lead to productivity.

Chapter 2 includes reviews of qualitative and quantitative studies that help define transformational leadership as it might look for educational leaders. This is followed by a review of theoretical literature that provides a basis for expecting that transformational leadership practice by educators would lead to academic achievement. Chapter 2 describes the development of the theory of transformational leadership as it has been applied to educational leadership. Two other educational leadership theories, managerial and instructional, are briefly described. The informal theory of high expectations is discussed, especially in relation to the other three educational leadership theories. The theoretical discussion also includes the relationship between leadership and learning. The majority of Chapter 2 describes literature on the study variables. The outcome (dependent) variable is results on Colorado's standardized tests, particularly the Colorado Measures of Academic Success. The independent variables are educational leadership characteristics, including high expectations. The chapter concludes with a brief description of covariates identified in the literature.

Chapter 2: Review of the Literature

Introduction

More than 40% of eighth graders scored below proficient on Colorado standardized math tests in each year from 2008-2013 according to statistics found on the CDE website. The popular solution among educational policy makers and the public is to raise expectations. Research has shown that high expectations do not always promote educational benefits. However, there is a lack of research to indicate when high expectations are productive and when they are not. In contrast to the theory that high expectations are always appropriate, social learning theorists have stressed the importance of learners having success that will lead to self-efficacy and further success. Social learning theory is compatible with transformational leadership theory in that both stress the importance of mentors, such as school principals, modeling desired behaviors. National and Colorado educational policy emphasizes principal leadership accountability. Researchers have found the transformational leadership style to be the one preferred by most principals, but there is a dearth of research to indicate what specific transformational leadership behaviors, or combination of behaviors, are most likely to predict higher student scores on standardized tests. The problem I addressed in this project is the scarcity of research comparing specific leadership behaviors with standardized test results. One goal was to find out if transformational leadership behaviors can predict when high expectations are effective and when they are counter-productive.

The purpose of this study was to provide data and analysis to help fill a gap in the existing literature so that policy makers, principal preparation institutions, and principals

will have additional research-based data upon which they can base decisions on what behaviors to maintain or adopt in order to improve student achievement. More specifically, my objective in this statewide study was to test the thesis that other principal leadership factors, including individualized consideration, are more predictive of student achievement than high expectations. In order to test that thesis, I gathered data from the CDE website and from principal questionnaires, then analyzed that data using correlational statistical processes in SPSS. The results of the statistical analysis indicated which principal behaviors were correlated with proficiency on standardized academic achievement tests.

In order to assess what is happening in U.S. and Colorado education, there is a need to look deeper than statewide averages by exploring what is happening at the local school level. In order to support the idea that local school performance varies among schools and from year to year, I randomly selected four Colorado middle schools from the public list on the CDE website. Then I constructed Figure 2 using public information from the CDE website. The random sample of four middle schools shows that there are differences in individual school performance. Data from these four schools was not intended to be representative of the more than 150 Colorado middle schools. The only point I intended to make was that individual schools can vary widely from the state average, and it only took four schools to show the validity of that observation.

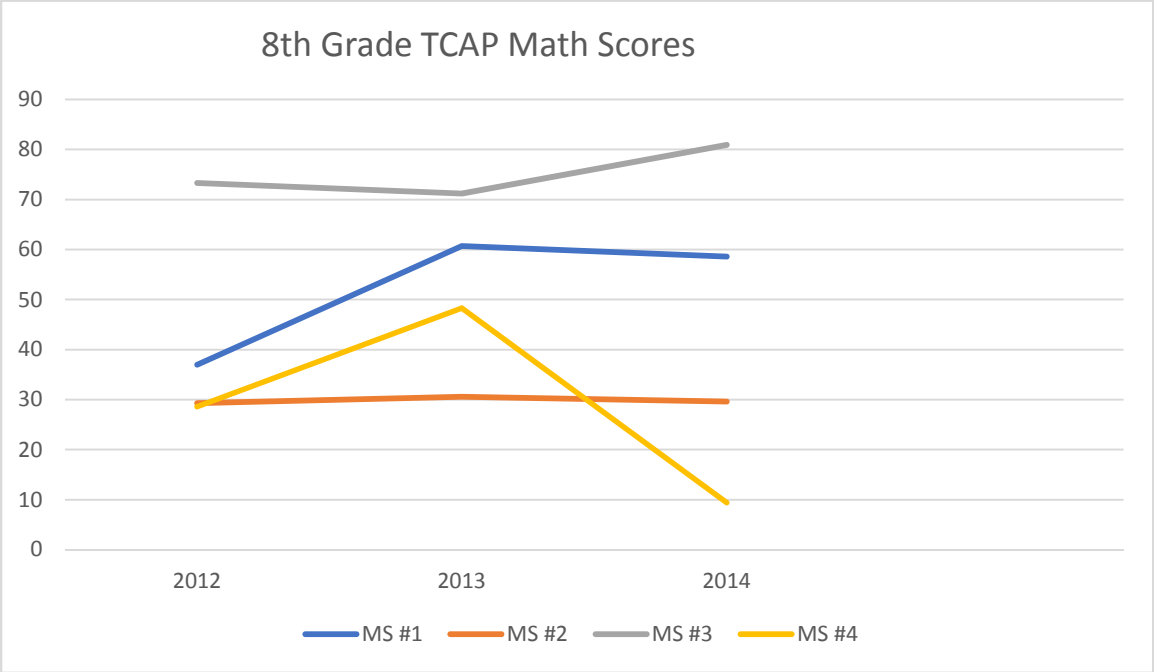

Figure 2. Eighth grade TCAP math scores. *Note*. Based on data from the CDE website. The y-axis is the percentage of students who scored proficiently.

One middle school (MS#1) started with low scores in 2012 with a score of 38%, improved greatly in 2013 to 60%, and then had a decrease in 2014. A second middle school (MS#2) started with low scores and stayed much the same. A third middle school (MS#3) started with high scores, lost a little, and then increased more. A fourth middle school (MS#4) started with low scores, increased, and then fell dramatically. The difference in school performance from year to year begs the question of why. If correlations are found among principal behaviors and test scores, then it would be desirable to study whether or not those correlations could predict the differences in school test scores.

At least a few schools differ from the mean. Looking at the means alone provides a deceptively bland picture of what students are doing. In this project, I sought to look at a spectrum of school achievement that would provide a clearer picture of what has been

taking place in Colorado middle schools, with the goal of finding why some schools do better than others. Some of the factors such as socio-economic status are beyond the educator's realm of influence. However, educators can modify their own behavior.

Perhaps policy makers can help educators to modify their behavior. Croft, Roberts, and Stenhouse (2016) criticized reform efforts and said that educator morale and productivity were at an all-time low. Croft et al. suggested that large-scale testing is worse than a waste of time, contending that it leads to student illness over test angst and it satisfies corporate greed to produce the expensive testing materials. Although Randi Weingarten, president of the American Federation of Teachers, also acknowledged that educators are working in a hostile environment, she has advocated for national tests aligned with national standards for core subjects (Kearney, 2011). Weingarten's position appears to align with that of Colorado teachers. A random sample of 1,000 Colorado teachers noted that adjusting their curriculum to Colorado standards had improved instruction. However, attention to Colorado testing had lowered faculty morale (Taylor, Shepard, Kinner, & Rosenthal, 2003). It appears that most teachers are resigned to large-scale testing while the public and policy makers are staunchly in support. Statewide standardized testing is currently a given. The practical issue becomes how to improve student scores. Perhaps if scores improve, public trust may be restored, with a resulting freedom to help students pursue their individual dreams.

Perhaps findings from this study could help governmental leaders avoid the type of mistake that was made in the education-related policy of ending federal funding of school mentoring programs. There was an important exception to the overall modestly positive research results on school-based mentoring. In 2009, the ED contracted with the

National Center for Education Evaluation (NCEE) to assess the effectiveness of the school-based mentoring programs funded through federal grants. The NCEE assigned Bernstein, Rappaport, Olsho, Hunt, and Levin to the evaluation work. Bernstein et al. (2009) found that programs receiving grant funds through the ED student mentoring program had no statistically significant impacts on student outcomes after one school year. Findings from the Bernstein study were used to eliminate funding for mentoring programs from the FY 2010 federal budget (Wheeler, Keller, & DuBois, 2010).

The Bernstein study reported averages of all the programs together rather than assessing individual programs or groups of programs. In contrast to Bernstein et al., Gray (2012) found a highly significant improvement in grades in a treatment group of 40 African-American males over a control group of another 40 African-American males. If some mentoring programs were above average, then some programs were below average. The averages likely hid the impacts of programs that were doing well and those programs that were detrimental. Perhaps the averages of standardized tests mask the degree of success or failure of individual schools.

In FY 2010, Congress and the president cut funding for a federal mentoring program because of flat results calculated on the basis of program-wide averages. Eliminating funding for K-12 is not politically feasible, but the same type of mistake can be made in evaluating its effectiveness. In the 1990s and early 2000s there was a great expansion of mentoring programs after the publication of favorable research. Tierney and Grossman (1995) found an average increase of 3% in GPA over the course of an 18-month study period. The number of Big Brother/Big Sister (BBBS) school-based matches grew from 27,000 in 1999 to 90,000 in 2002, while community-based matches grew

nationally from 92.000 to 100,000 during the same period (Herrera, 2004). In 2006, the National Mentoring Partnership (2006) estimated there were 2.5 million young people in formal mentoring programs.

School-based mentoring was included in the 2001 iteration of the Elementary and Secondary School Act called No Child Left Behind (NCLB). The NCLB legislation specified standards for entities to meet in order to qualify for the grants. Researchers conducted numerous studies on the effectiveness of mentoring between 1995 and 2011, which showed modest benefits from mentoring. A meta-analysis reviewing 55 evaluations of youth mentoring programs by DuBois, Holloway, Valentine and Cooper (2002) showed an effect size of .11. Karcher (2008) evaluated a sample of 516 predominantly Latino students across 19 schools and found a similar .10 positive effect on self-reported self-esteem, on connectedness to peers, and on perceived social support from friends.

Not differentiating between effective and detrimental mentoring led to the removal of funding for all, including some productive programs. Not differentiating between poor- and well-performing schools has led to unproductive pressure. Mentoring research points to which behaviors could be productive and which are detrimental. Mentoring research brings together concepts from expectancy theory and social learning theory that provide a foundation for research on specific leadership behaviors. Mentoring research is illustrative of the fact that judging the success or failure of education exclusively by mean averages provides an inadequate view of the problem that is not helpful in making progress. The big mistake was overlooking positive and negative programs, which contributed to a knowledge gap.

In this chapter, I describe the development of transformational leadership theory as it has been applied to educational leadership. I then briefly describe two other educational leadership theories, managerial and instructional, before discussing expectancy theory, especially in relation to leadership theory. The theoretical discussion also includes a discussion of the relationship between leadership and learning. The majority of Chapter 2 includes review of literature on the study variables. The outcome (dependent) variable was results on Colorado's standardized tests, particularly the CMAS. The independent variables were educational leadership characteristics, including high expectations. I briefly describe the Covariates identified in the literature.

Literature Search Strategy

I searched ProQuest, PsychInfo, SocInfo, ERIC and Google Scholar to identify articles published between 2009 and 2016 using keywords *principal leadership*, *managerial leadership, instructional leadership, beneficial modeling, inspirational motivation, systems thinking, individualized consideration, shared leadership*, *high expectations*, *school-based mentoring, attunement, transformational leadership*, *academic achievement, standardized testing, education policies, and social cognitive theory*. The references from those articles provided leads to significant research and seminal theory.

The CDE website was my source for results on statewide standardized testing through its Schoolview/Cognos database. The CDE website also included technical information on the validity of their tests, as well as articles explaining standards and accountability policies. The library stacks at the University of Northern Colorado, Denver University, the University of Colorado, and Colorado State University were sources of

current and seminal work in educational leadership as well as textbooks on quantitative research. With such a rich body of literature, my challenge was to focus on a single thesis and research project.

Theoretical Foundation

The theories that were especially relevant to the purpose of this study were expectancy theory, social learning theory, and transformational leadership theory. I developed the theoretical foundation of this study by combining theories that explained well-done mentoring research. Mentoring researchers have identified traits of successful and unsuccessful mentors. In mentoring research, mentors have been divided into two categories based on their goals (Morrow & Styles, 1995) with one category labeled as *developmental* and the other category labeled *prescriptive*. Developmental mentors are those who focus on developing relationships. Prescriptive mentors are goal oriented, sometimes to the exclusion of considering what the mentee thinks is important. Researchers have found that mentors with relationship goals are more positively effective than mentors with prescriptive goals (Pryce, 2012).

In a study of three group mentoring programs, Herrera, Vang, and Gale (2002) found that group mentors who had strong relationships with their mentees exhibited behavior that was consistent with that of mentors in strong one-to-one relationships. For example, successful mentors were sensitive to youth's preferences, getting to know them personally rather than focusing exclusively on the program. It would appear not too large a step to go from group mentoring to teaching. DuBois and Silverman's (2005) analysis of Wave III of the National Longitudinal Study of Adolescent Health showed a broad range of benefits from naturally occurring mentoring relationships. Natural mentoring

relationships, such as with teachers, accounted for more than two-thirds of all reported youth mentoring relationships (DuBois & Silverman, 2005).

Relationship development could be similar to what Pryce (2006) labeled as attunement. In a qualitative study, Pryce (2006) associated highly satisfactory mentoring relationships with higher mentor attunement and unsatisfactory mentoring relationships with low mentor attunement. Attunement and relationship building are characteristics of transformational leadership. Prescriptive goals could be associated with transactional leadership and high expectations. As transformational leadership can be correlated with better standardized test scores than transactional leadership, the validity of Pryce's and others' work can be broadened. Educational research on transformational learning has tended to focus on change rather than on the importance of relationship building, regardless of the degree of change that is needed.

Although Carter's 2008 study resulted in a lack of statistical significance, her rich descriptions illustrate the relationship between mentor and mentee that could correspond to principal/teacher and teacher/student. Carter (2008) had 10 middle school students take a reading achievement test before and after a mentoring program. The largest difference was a negative change of 23 points. That student with the negative change felt the mentor was making him do work that was too hard. The mentor expected that the student could and would do the work. The student who gained the most (13 points) said that her mentor helped her talk about important matters, and was always nice to her. These dramatic results were hidden by the mean which showed no overall gain by the group. The differences are consistent with investigations by Morrow and Styles (1995) who found

that mentors who focus on the relationship tend to be more successful than those who focus on meeting expectations.

Those who have studied mentoring for decades, such as, Rhodes (2002) discuss both the risks and rewards of mentoring youth. Rhodes stated that the ability to understand and respond empathetically to others' experiences is necessary to form a bond in a relationship so that good things result. Rhodes warned about the large risks of poor mentor/mentee relationships, as well as the moderate benefits of successful mentor/mentee relationships. Three areas of enhanced development were identified by Rhodes (2002): 1. Social and emotional well-being; 2. Cognitive skills; and 3. Service as a role model and advocate. It is easy to then associate increased cognitive skills with academic achievement. Pryce's (2012) work appears to support Rhodes (2002). Relationship building may be key to the change that is expected in transformational leadership. Testing whether or not the prescription/relationship building distinction applies to schools was incorporated into the variables that were tested in this study. The prescription approach was to be analyzed in the context of high expectations and the relationship building approach was to be analyzed in the context of transformational leadership, particularly individualized consideration.

Expectancy Theory

High expectations are a proposition of expectancy theory. The idea is that having high expectations will lead to high achievement, whereas low expectations will lead to low achievement. It is not just public officials and the public who advocate for high expectations. In the first paragraph of the first chapter in his book *Teach Like a Champ,* Lemov (2010) says that high expectations are the most reliable driver of high student

achievement. Lemov then refers to the Pygmalion in the classroom study. Despite the fact that it is an old study that was sharply criticized by other researchers when it was published, Pygmalion in the classroom may be the most familiar educational research to those interested in education today. In their discussion of Pygmalion in the classroom, high expectations were brought to the forefront by Rosenthal and Jacobson (1968). Rosenthal and Jacobson compared two groups of elementary students. For one group, teachers were told that they were going to have an exceptionally good group of students the coming year. The teachers of the other comparable group of students received no instruction that would lead to higher expectations. Rosenthal and Jacobson reported that at the end of the school year IQ tests showed that the Pygmalion group outperformed the control group.

Flashoff and Snow (1970) criticized the statistical analysis used in Rosenthal and Jacobson (1968). No "expectancy advantage" was found for grades 3 through 6 of the treatment group. The number of first graders in the experimental group was 7 and the number of second graders in the experimental group was 12. The validity of the study is stretched considerably to go from 19 first and second graders to national policy for K – 12. In 1971, Rosenthal and Rubin (1971) offered a refutation of Flashoff and Snow (1970) in which they said that the reevaluation of data by Flashoff and Snow did not change their findings. In their report of positive results for self-fulfilling prophecy as fostered by teachers, Tsiplakides and Keramida (2010) pointed out that Rosenthal and Jacobson's (1968) results were not always confirmed by other researchers. Perhaps the findings reported in the Pygmalion study were not solid to begin with.

It is unlikely that there is any study on expectancy theory that is similar to this dissertation. This project challenges the assumption that high expectations are the most reliable driver of student achievement. Other studies on expectancy theory were discussed in the section on high expectations as one of the study variables.

Social Learning Theory

Social learning theory may help explain when high expectations are effective and when they are not. A part of Bandura's broad social learning theory is self-efficacy. Self-efficacy is the concept that as people have success they will feel more competent to take on other challenges (Bandura, 2007). The opposite may also be true. As people experience failure to meet unrealistic expectations they may tend to give up. There is some similarity between expectancy theory and self-efficacy theory. The goal in both would be for a student to grow in confidence that he/she can and will achieve academic proficiency. The difference is the focus. High expectations focus on the goal. With confident students a lofty goal may be sufficient, but high expectations may frustrate a student who has experienced repeated failure. Self-efficacy focuses on the student having success. The development of self-efficacy may take a great deal of caring, wisdom, and persistence to help some students experience success.

Van Yperen and Orehec (2013) appear to be on the same trek as Bandura, noting that competence is a basic psychological need. People feel confident, or not, on the basis of the standards they are using when evaluating their performance. In a survey of 2,158 workers in a wide range of professions, Van Yperen and Orehec found that an approach of doing things better than they had before was more common to success than striving to do better than others or not to do worse than others. They called the doing things better

than before a mastery approach. Dweck (2006) contributed to this discussion of goals and expectations with the importance of a growth mindset. Dweck's concept of a growth mindset fits with Van Yperen and Orehec's (2013) concept of a mastery approach. Dweck (2006) described the counter-productive thinking as having a fixed mindset. The fixed mindset focuses on talent, whereas the growth mindset focuses on work. Dweck's concepts are based on research she completed in which she observed how children handled apparent failure. Although there is disagreement in the above reports on studies done on the influence of expectations, the research of Rosenthal and Jacobson (1968), Van Yperen and Orehec (2013), and Dweck (2006) together with the concept of self-efficacy help frame the next step in research. We know sometimes high expectations are fruitful and sometimes they are counter-productive (Tsiplakides & Keramida, 2010). We know that the criteria of evaluation influences expectation results (Van Yperen & Orehec (2013) and we know that mindset influences reaction to results (Dweck, 2006). There is a need to know if educators can influence the mindset of those who take the standardized tests and this study may aid in that understanding.

Dweck's (2006) growth mindset that emphasizes work over talent may have implications for public policy. Even though people in the United States have a long history of high work ethic, Bamburg (1994) found that the majority of Americans viewed their success as dependent on their ability whereas the Chinese and Japanese viewed success as dependent upon work. Perhaps what is needed to raise test scores is for Americans to get over thinking they are naturally the best, figure out what steps need to be taken to help each child master each important concept, and then get to work one step at a time, celebrating each accomplishment, all the while modeling a growth concept.

Transformational Leadership

Transformational leadership may be the umbrella that covers the most important set of behaviors that can lead to improved student test scores. The majority of US school principals seem to have embraced transformational leadership (Oronato, 2013). The question is: What specifically have they embraced? Defining what is and what is not transformational leadership is the main topic through the remainder of this discussion on theory and into the discussion related to variables. It is important to develop the theory down to specific behaviors in order to find out how they may enhance student achievement that could be demonstrated by improved standardized test scores.

The identification of transformational leadership began with general observations made by Burns (1978) after a career of studying the character traits of numerous historical leaders. Burns said that the relations of most leaders and followers are transactional. Examples of typical transactional relationships include subsidies for political support, work for pay, and grades for completing assignments. In contrast, the transforming leader seeks to satisfy higher needs, considers mutual aspirations and values, and enables followers to make meaningful choices. Burns said that transactional leadership results in short-term limited change in a follower's behavior whereas transforming leadership transfers follower's needs into something greater, such as hope and aspiration to fulfill goals and values.

Burns (1978) viewed leadership as being closely related to learning. He said that leadership and education become almost inseparable when both are concerned with increasing motivation through means other than indoctrination or coercion. The two types of leadership defined by Burns correspond to two theories of learning: behaviorist and

social cognitive. Behaviorist learning theory corresponds to transactional leadership. Social learning theory corresponds to transformational leadership. Behaviorist and social learning theories help us to understand how transactional and transforming leadership work and begin to help us understand what specific tasks indicate their presence.

Behaviorist theory is built upon a simple process called operant conditioning. When a desirable (to the conditioner) behavior is followed by a desirable (to the conditioned) reward, that behavior is more likely to occur again. Operant conditioning also occurs when a person learns to avoid a painful consequence of his/her behavior. Operant conditioning is a scientific fact. However, some behaviorists such as B. F. Skinner (1971) have said that operant conditioning explains so much of human behavior that the concepts of freedom and dignity should be dismissed. The corresponding consequence for leadership is that transactional leadership alone would be worth pursuing.

Clawson (2012) was particularly critical of Skinnerians who argued that leadership should focus only on observable behavior. Clawson said that leaders must also be aware of values, assumptions, beliefs, and expectations. Belle's (2013) work appears to support Clawson rather than Skinner. Belle` claims to have conducted the first experimental work on the performance effects of transformational leadership in the public sector. The participants were 138 nurses in a public hospital in Italy. Belle` found increased performance from those nurses who were exposed to a technique to persuade themselves that they were making a positive difference in people's lives. Belle` found a general positive benefit from transformational leadership on the nurses. She suggested that the emphasis on mission would naturally support public sector employees who are

inherently required to look beyond their interests to consider the interests of the whole community (Belle`, 2013). The benefit of all the stakeholders does not appear to be the fundamental drive in United States' educational policy at this time. In the past teachers benefitted from adulation about the positive effect they were having on young lives who would become the future of the country. Croft et al. (2016) are probably correct that criticism of teachers negatively affects their performance. The mission and collaboration ideas of Belle` fit with Bass's (1998) concept of inspirational motivation, which was one of the factors used in this study to help define transformational leadership. Belle's work also reinforced Senge's (1994) concept of systems thinking by showing the value of leaders encouraging followers to see their part in the whole organization. Systems thinking was one of the factors used as an independent variable in this study.

Continuing the thoughts of Burns (1978), Bass (1987) said that transformational leaders move beyond self-interests based on contingent reward. Bass (1987) used the word transformational rather than transforming and took Burns' theory of leadership further by describing components of transformational leadership. According to Bass, the transformational leader is charismatic, inspirational, intellectually stimulating and individually considerate (Bass, 1987). Two branches of research developed from Bass' work. The predominant path involves using Bass's Multifactor Leadership Questionnaire (MLQ) that leaders can take to evaluate their style of leadership on a full range of leadership scale which he also developed. For example, Onorato (2013) used the MLQ to survey 45 principals from elementary, middle, and high schools in the New York state area. The results were similar to other studies which showed the majority used transformational leadership, nearly a quarter used transactional leadership, and a few

used passive leadership. The "So what?" question could be asked. Did the transformational leaders provide better results? If the majority of principals are already using transformational leadership, then is that an indication that it is not helping to increase test scores? The other path from Bass' work was blazed by Jantzi and Leithwood (1996) who developed survey items from Bass' leadership factors to understand teachers' views of a principal's effectiveness. The results of their work have enabled researchers to better assess the degree to which principals exhibit transformational leadership (Valentine & Prater, 2011).

According to Onorato (2013), the business sector has made extensive use of Bass' tools while the educational sector has not. However, I found studies from other countries and doctoral dissertations that have studied the relationship between transformational leadership and student achievement. Transformational leadership is not the panacea for all educational problems (Menon, 2014). In Cyprus, Menon found that although transformational leadership predicted job satisfaction, it did not increase teachers' perception of student outcomes. Menon's results were similar to a case study by Angelo (2005) who interviewed teachers and a middle school principal to ascertain why they were a high-performing school. Teachers said that the principal worked on relationships that provided a great deal of job satisfaction, but at the same time questioned how that turned into higher student performance. Perhaps those teachers overlooked the simple fact that students were doing well above average there. The studies by Menon and Angelo demonstrate the need to identify specific behaviors that are transformational to be variables so that a deeper understanding of when those behaviors contribute to student achievement and when they do not.

Similar Studies

The research that is most similar to this dissertation was done by Klinginsmith (2007) who studied the correlation among various leadership factors of middle-school principals and results on Missouri's standardized tests. Klinginsmith successfully established that several leadership factors were correlated with test scores. Klinginsmith did not specifically try to establish when high expectations might be predictive and when they might not be. Probably, through the help of Valentine his advisor, Klinginsmith was able to gather survey data from a majority of Missouri middle-school principals so that analysis showed several of the correlations to be significant. However, Klinginsmith did not take his analysis as far as was proposed in this study in analyzing combinations of variables. Another similar study by Valentine and Prater (2011) compared high school principal behaviors with results on Missouri's standardized tests. Valentine and Prater analyzed possible correlations of nine leadership variables and four demographic variables. My study added to and adjusted those variables based on theory and other research.

Rationale

The rationale for choosing expectancy theory was that it appeared to drive much of the public policy on education. The choice of social learning theory was because it helped explain why high expectations are not always successful. Social learning theory also explains why transformational leadership behaviors can be effective. The emphasis on transformational leadership in this study was based on its popularity among educators and its potential to explain when high expectations are effective.

The research question of what behaviors a principal should maintain or adopt to increase standardized test scores is built upon expectancy theory, social learning theory, and transformational leadership theory. My study challenges the assumption that high expectations are always sufficient to increase student proficiency on statewide standardized testing. The study increases understanding in the field of what behaviors are transformational and which are not transformational.

Building on Theory to Answer Research Question

Expectancy Theory, Social Learning Theory, and Transformational Leadership Theory are not antithetical to standardized testing to answer the research question. Some of the calls to get away from educator accountability related to standardized testing are rather emotional. Research itself may not be the enemy and could provide some support. Transformational leadership need not be considered as emotional and unscientific. In his 1911 book on scientific management that was republished in 1972, Taylor said that work should be standardized when the most efficient methods are discovered through scientific study and analysis (Taylor, 1972). This does not necessarily lead to a mechanistic system that is insensitive to human interests. In his testimony before Congress, Taylor said that scientific management has a great advantage over the management of incentive because the initiative of the workman will be regular while the initiative by incentive will only be sporadic (Taylor, 1972). It is not difficult to relate initiative by incentive to transactional leadership. Taylor said that an intimate, close, personal cooperation between management and workmen is a key to scientific management. That sounds similar to transformational leadership. The purpose of this study was to look as empirically as possible at the most efficient and productive type of educational leadership.

Literature Review Related to Variables

Transformational Leadership Variables

Under his leadership, Leithwood and researchers working with him developed the variables of most interest in this study, as well as the instrument used to measure them. In the process of studying influences on teachers' perceptions of their principals, Jantzi and Leithwood (1996) defined six aspects of transformational leadership and then studied their relationship with the demographics of some 420 British Columbia teachers. Jantzi and Leithwood (1996) found that teachers' perceptions were largely explained by alterable, rather than unalterable variables. Besides the four aspects of transformational leadership identified by Bass (1987), Jantzi and Leithwood (1996) added the fostering of group goals and high expectations. The addition of group goals was accepted in this study because this concept maintains the general emphasis on relationship development that is at the heart of transformational leadership. Although high expectations was a key variable in this study, it was not considered here as an element of transformational leadership because it can also be practiced in transactional leadership.

In 2000, Leithwood and Jantzi reported that a survey of 1,762 teachers and 9,941 students found a significant relationship between perceived transformational leadership characteristics and school participation. In 2005, Leithwood reported the results of a large (63 cases across 7 countries) qualitative study on the characteristics of successful school leaders. This study provided another lens into transformational leadership qualities. Dispositions common to many of these leaders included harnessing a caring ethic to a passion for educating children. These leaders also demonstrated a high degree of emotional sensitivity to the needs and aspirations of their teachers, students, and parents.

Successful leaders were described as skilled communicators, willing to listen carefully to the ideas of others, and creative in problem solving (Leithwood, 2005). Qualitative research is helpful in exploring more fully how a leader influences teachers and students but is less helpful in documenting the range of beneficial behaviors and judging their relative power. The complimentary nature of results from qualitative studies combined with results from this correlational study made a case worth considering.

Beneficial Modeling

Modeling is central to social learning theory and a key factor in transformational leadership theory. The discussion of several independent variables to be used in this study begins with modeling. Leadership theorists have discussed the concept of charisma (Hickman, 2010). Bass (1998) used the term *idealized influence* to describe the charismatic leader as one who behaves in ways that result in their being role models for their followers. Furthermore, followers identify with leaders and want to be like them. Bandura (1987) said that modeling can be predicted to have an effect on the actions of others. For example, people laugh when others laugh, they are quiet when others are quiet, and they start leaving events when others leave events. Social cognitive theory emphasizes the power of modeling in learning. Effective leaders model the behaviors they seek in followers (Estapa, 2009). Effective leaders provide an example consistent with the values they espouse (Klinginsmith, 2007). Although transformational leaders take risks, they are consistent rather than arbitrary. They can be counted on to do the right thing. Trust is required for followers to be transformed (Burns, 1978). Transformational principals respond appropriately to feedback from faculty (Prater, 2004).

Mentoring is a purposeful attempt to help people achieve by the use of modeling. Angelo (2005) reported that teachers in a low-income, high achieving school made an extra effort to mentor those students who performed poorly on state standardized testing. Studies in the 1990's on school-based mentoring showed promise for helping at-risk children. The reports of a national sample of youth found that there is a powerful influence by mentors on the educational success of youth (Erickson, McDonald, & Elder, 2009). Valentine and Prater (2011) found modeling to be the most consistently significant factor in principal leadership that was correlated with academic achievement. Although the practice varies widely, many schools have a mentoring program for novice teachers. My study helps to provide information on what formal novice teacher mentoring programs should include, as well as to provide ideas for effective informal mentoring by educational leaders. If mentoring is consciously used for teachers, it would seem that it might be wise for a teacher to consciously and attractively demonstrate the behaviors he/she would like students to acquire. To encourage effective teacher mentoring principals should be conscientious models to their teachers and students.

Inspirational Motivation

Bass (1998) used the term inspirational motivation to describe how transformational leaders motivate and inspire those around them by providing meaning and challenge to their followers' work. Leaders get followers involved in envisioning attractive future states. They are able to communicate expectations that followers want to meet. Transformational leaders have a compelling organizational vision that demonstrates an enthusiasm for work (Estapa, 2009). The leader insures that followers understand their importance to the organization and encourages them to reach their full potential (Estapa,

2009). At times Bass combined charismatic leadership and inspirational motivation into a single factor. Jantzi and Leithwood (1996) kept the concepts separate in their Principal Leadership Questionnaire (PLQ). My study also keeps them separate.

In a study of a random sample of 397 classroom teachers, Eres (2011) found no relationship between the transformational leadership characteristics of school principals and the level of teacher motivation. However, another study found vision building and intellectual stimulation to have a significant effect on teacher's commitment, particularly to school reform (Geijsel, Sleegers, Leithwood, & Jantzi, 2003). The difference may be the result of the aspects of transformational leadership studied. It is important to analyze the dimensions of transformational leadership for their separate effects on teacher commitment and extra effort. In this study five dimensions of transformational leadership were identified and also four dimensions of leadership were identified as not being transformational.

Taylor (2007) found that self-awareness is an important part of being able to relate to people. This reinforces Clawson's theory of leadership. It is not especially productive to dictate a vision statement. The reason that Martin Luther King's *I Have a Dream* speech was so effective is because so many could relate to it. His speech is an example of attunement that will be discussed further under individualized differences.

Systems Thinking

Bass et al. (1987) as well as Leithwood and Jantzi (1997) described this transformational leadership factor as intellectual stimulation. Followers are led to be innovative by questioning assumptions, reframing problems, and offering new approaches. My project departs slightly from their concept to include Senge's (1994)

concept of systems thinking and the development of a learning organization. Followers are encouraged to see their part in the whole organization. Followers are encouraged to try new approaches and are not criticized for simply having different ideas than their leader. Senge, Hamilton, and Kania (2015) noted that change efforts that are based on rigid assumptions and agendas fail to see that transforming systems is ultimately about transforming relationships. They provided an example of a Nike executive who asked questions to create an environment where designers were challenged to produce products that did not contain toxic chemicals (Senge, et al.). Transformational leaders facilitate problem solving and grow the organization (Estapa, 2009). Belle's (2013) study showed that public employees who taught themselves to look at the effects they were having on customers and the organization were more productive. Modeling a desire to learn may be an important behavior that fits under the umbrella of transformational leadership. It may be that demonstrating a willingness to learn may be more productive in educational leadership than having a know-it-all attitude.

Senge (2012) said that the industrial-age system of education will have to change to a system that provides opportunities for learners to become self-directed, having a larger sense of responsibility who can work in teams and larger networks to solve complex problems. The schools that exemplify these goals have students working on real community problems in which students offer solutions that contribute to a sustainable world (Senge, 2012). Senge did not see this engaging new wave of education as compatible with large-scale testing. However, studies similar to this one may show that students are not only more prepared to participate in business, they will do better on standardized tests if they are engaged in relevant learning activities. Such results would

be in alignment with social learning theory that successful learning gives students incentive to have more successful learning (Bandura, 2007)

In applying their business philosophies to education, Goleman and Senge (2014) said that it is important to focus on three areas: our interior world, empathy, and a systematic understanding of the world. The outer focus enables the understanding of how systems interact to form webs of interdependence in families, organizations (schools) and the world. The interior world includes finding a sense of purpose that enables a person to concentrate on tasks and manage emotions. Empathizing, or understanding another person's reality, is said by Goleman and Senge to lead to caring and an ability to work together. The next section on individualized consideration incorporated research that expands the concepts of interior focus and empathy.

Individualized Consideration

According to Bass (1998), transformational leaders pay special attention to each individual follower's need for achievement and growth by acting as a coach or mentor. The leader recognizes and takes into consideration individual needs and desires. Transformational leaders also offer time and support to individuals to achieve their personal goals, especially those that have been previously neglected (Burns, 1978). Goleman argued that the presence or absence of emotional intelligence could be a large factor in success for those who possess cognitive intelligence because of the importance of human relationships. Transformational leaders listen carefully and see the individual as a whole person and not just an employee. Each individual is led in the way best for them, for example, limited direction for some while providing structure for others (Estapa, 2009). A goal for the individually considerate leader is to help develop followers through

assigning and monitoring tasks while not micro-managing. The consideration of the mentee's values, attitudes, beliefs, expectations, and abilities facilitates the formation of mutually accepted goals. As the student achieves goals they have confidence to try to achieve more.

According to Dewey (2010b), the most effective teacher quality is the ability to watch and respond to students with regard to the subject matter presented. Those teachers "have a quick, sure, and unflagging sympathy with the operations and process of the minds they are in contact with. Their own minds move in harmony with those of others, appreciating their difficulties, entering into their problems, sharing their intellectual victories (Dewey, 2010b, p. 36). Dewey went on to say that such teachers have the fortitude to identify the successes and failures of this process in order to make improvements. The importance of individualized consideration in the establishment of expectations was at the heart of this study. Although the link between individualized consideration and expectations had not been made, there was evidence that building relationships is important in helping learners to achieve (Morrow & Styles, 1995).

I studied the literature on social and emotional leadership in order to consider whether or not they should be the focus of my research. Bar-On (2006) developed a self-reporting instrument to measure social and emotional intelligence called the Emotional Quotient Inventory (EQ-i). The EQ-i has 133 items and took about 40 minutes to complete. That might be a little long to ask principals to complete. De Vito (2009) used a version of the EQ-i that was shortened to 51 items. The shortening of the instrument took care of one concern, but two others remained. De Vito's study of 64 high school teachers appeared to be very well done and yet she only found one significant correlation in the

relationship of teacher burnout and emotional intelligence. The only correlation that was found was between the total EQ-i score and the personal accomplishment aspect of burnout. The Principal Leadership Questionnaire used by Valentine and Prater (2011) produced several significant findings. Also, the Bar-On survey was more narrowly focused, perhaps only relevant to the factor of noting individual differences.

Emotional Intelligence in itself may not be enough to make a difference in student performance. A study by Grant (2008) tested a program that gave two male students with Emotional Disorder an opportunity to express the problems that occupied their thinking. This was not found to be enough to facilitate academic achievement for them. Perhaps it is important for the mentor/teacher/principal to not only be able to ascertain the emotions of the mentee/student/teacher but also to figure out how to adjust learning goals to that awareness. Research that may help explain why the ED boys may not have improved was conducted by Lam and O'Higgins (2011) who found transformational leadership to fully mediate the effects of a manger's emotional intelligence on employee job satisfaction. The narrow focus of the Bar-On survey compared to the Principal Leadership Questionnaire (PLQ) was a major reason for choosing the PLQ for this study.

As Burns (1978) maintained, leadership and learning are close disciplines. Through the concept of mentoring, leadership and counseling are also related. Pryce (2012) took the concept of attunement from counseling and applied it to mentoring. Attunement is the ability of a counselor/leader/teacher/mentor to discern the needs and desires of the client/follower/student/mentee. The attuned leader is attentive and flexible in negotiating activities and conversation topics. Morrow and Styles (1995) observed two types of relationships in mentoring: those which they labeled *developmental* and those

which they labeled *prescriptive*. Mentors in developmental relationships focused on developing the relationship. Mentors in prescriptive relationships focused on goals for youth improvement. Attunement was associated by Pryce (2012) with developmental relationships and prescriptive relationships with misattunement. Although they do not use the words, examples of attunement and misattunement can be found in the work of Carter (2008) and Rhodes (2002). Keller and Pryce (2012) found that relationships in which amicable engagement was balanced with adult guidance were rated most favorable by youth mentees. Students involved in sage mentoring relationships showed declines in aggressive behaviors, whereas, students in disconnected pairs showed more negative behaviors. The principal behavior factor of attunement to individual differences may be key to principals leading staff and students to academic productivity.

Shared Leadership

Shared leadership is behavior that demonstrates the ability of the principal to promote cooperation in fostering the acceptance of group goals. Yang (2014) reported a case study in which educational leaders of a Chinese province worked together to help each school principal solve problems, especially in new schools. Yang found that collaboration and the building of a shared vision were critical in school improvement. The collaborative nature of Yang's colleagues was a contrast to the "improve student test scores or we will get someone else" attitude prevalent in American education. At least some segments of American society know better. Hickman (2010) edited a popular graduate level text on leadership. Several of the articles revolved around the topic of shared leadership. In his preface Hickman said that the intent of his book was to help readers to understand what facilitates shared responsibility for leadership.

Yu, Leithwood, & Jantzi (2002) described three clusters of leadership practices that all revolve around shared leadership: 1. Developing consensus about goals and priorities; 2. Developing people; and 3. Building a collaborative culture. Estapa (2009) found that effective principals view their primary role as facilitating change through collaboration. Bass (1998) did not identify shared leadership as a separate factor. Rather, Bass described shared leadership as an indication of the morality of a leader. Recognizing that dictators such as Hitler use transformational techniques, Bass distinguished the pseudo-transformational from the transformational leader. The pseudo-transformational leader is willing to harm others. The moral leader seeks to develop the whole group. Nelson Mandela provided a good example of transformational leadership when he refused to take revenge on those who kept him in jail. Mandela enlisted former persecutors for the betterment of all South Africans.

Bass (1998) said that empowerment is a product of individualized consideration, reinforcing the central importance of educator sensitivity to individual differences in their followers/students. While generally appreciative of Maslow's hierarchy of needs, Burns (1978) said that self-actualization was not the pinnacle of a person's development. The development of others is more important than catering to self-interests. Bass (1998) acknowledged that sometimes empowerment of others does not lead to positive outcomes, while maintaining that most of the time there is considerable payoff. Delegating effectively is very important in making empowerment work for the benefit of the organization as well as for the individual (Bass, 1998). Middle school climate can be improved by involving teachers in decisions (Rhodes, Camic, Milburn, & Rowe, (2009). Gordon (2006) described the accountability/standardized tests reform as inadvertently

promoting a top down factory like education system so that there is a doubling down on practices that are not working. The answer according to Gordon is to understand the importance of each teacher-student interaction, which includes engaging the student in their education. A principal who engages teachers should help promote student engagement. From the literature it would seem that the factors of individual differences and shared leadership should predict the efficacy of high expectations better than other factors.

Other Leadership Factors

Valentine and Prater (2011) found additional leadership factors besides transformational leadership to be of significance in predicting student success on standardized tests. Various factors may be important for principals to consider in efforts to improve their schools. As researchers began to look at educational leadership from a scientific perspective, the first approach that was advocated was managerial (Klinginsmith, 2007).

Managerial Leadership

In the 1930's the concept of managerial leadership was applied to principals who were expected to use sound business practices (Prater, 2004). Management responsibilities included policy implementation and maintaining organizational stability. Specific managerial tasks included planning, budgeting, seeing that teachers have necessary instructional resources, monitoring operations, setting efficient schedules, and establishing clear and consistent rules (Prater, 2004). With the passage of the Elementary and Secondary School Act (ESEA) in 1965 and its subsequent renewals, principals became increasingly responsible for managing lunch programs, bilingual education,

education for the handicapped, and other federal entitlements (Prater, 2004). Classroom management was noted as the most influential factor in first-year teacher success, and principals are expected to help (Monroe, Blackwell, and Pepper, 2010).

Yukl, (1982) conducted a thorough study of literature on principal effectiveness. He found little specifically on principal leadership. Yukl found considerable literature on business management and adapted that information to principal administration. Taking care of the everyday operations of the school are likely foundational to the establishment of a functional school, and therefore necessary to improvement in academic achievement. My study used some of the survey items developed by Valentine and Bowman (1989) that are likely partly based on the work of Yukl (1982).

Transactional Leadership

The relations of most leaders and followers are transactional (Burns, 1978). Transactional leadership occurs when a person takes the initiative to make contact with others for the purpose of exchanging valued items: subsidies for campaign contributions, salaries for teaching, grades for school work (Burns, 1978). The concept of transactional leadership meshes well with the scientific behaviorism advocated by Skinner (1971). Behavior is shaped and maintained by its consequences to the extent that environmental contingencies explain away the concept that man is autonomous (Skinner, 1971).

There is reason to believe that transactional leadership in itself is inadequate to assure improvement on standardized tests. Skinner (1971) said that we need to discard "mentalistic" explanations of behavior. In a belated reaction, Clawson (2012) said there would be leaders who ignore what people think and this would undermine their influence. Burns (1978) said transforming leadership is more complex and is also more potent than

transactional leadership. Further, Clawson emphasized the importance of values, assumptions, beliefs, and expectations. Influencing visible behavior alone "is a formula for mediocrity—not for world-class performance" (Clawson, 2012, p. 27). Unless the whole person is engaged, the work will not be as good as it could be.

Maslow's (1970) theory of motivation has been used to emphasize the importance of meeting basic needs before working on higher needs. When combined with Skinner's limitation to observable behavior, Maslow's motivational hierarchy can be seen to reinforce transactional leadership. When the ideas of Burns, Bandura, and Clawson are embraced, the importance of such aspects of Maslow's hierarchy as belonging can be seen as more motivating than candy. Karcher and Hansen (2014) reported that goal directed and relationship building approaches both had positive effects. Conversations involving relationship building produced three times as much satisfaction as goal directed conversations.

Rath and Clifton (2004) used several studies to support their theory of positive psychology. It appears that the number of studies done in the field of education are considerably fewer than other fields such as business. This coincides with Oronato's (2013) observation that there are many studies on transformational leadership in business, but he found none in education. The main thing I found in my educational literature search was anecdotes and opinion. More research studies are needed in education. Rath and Clifton (2004) found a 1925 study by Hurlock on the relative effects of praise, criticism, or ignoring fourth and sixth-grade students. The results were calculated based on the number of math problems solved correctly over a five-day period. The overall improvement of those who were praised was 71%, those who were criticized was 19%,

and those who were ignored improved 5% over a control group. Praise can be viewed as a contingent reward that is effective in increasing student achievement. However, Rath and Clifton pointed out by using examples that praise must be individualized to be effective.

High Expectations

Even though the results of the Rosenthal and Jacobson Pygmalion study may have been hyped, it is reasonable to think that higher expectations lead to higher results. Expectations continue to be correlated with student performance (Tsiplakides & Keramida, 2010). The question is whether or not a legislative mandate for higher expectations in itself can be passed on to principals, teachers, and students with positive outcomes. The literature so far seems to indicate that high expectations in conjunction with transformational leadership factors will lead to higher CMAS scores, but to the extent that high expectations may be present in the absence of transformational leadership factors, positive results likely diminish.

Wineburg (1987) was particularly critical of Rosenthal for claiming that subsequent studies proved that student IQ could be improved by teacher expectancies. Wineburg said that effective teachers adjust their expectations of students based more on classwork than on IQ tests. Jessim and Harber (2005) said that 35 years of research had shown that teacher expectations at least sometimes influence students. It remained unclear whether self-fulling prophecies in general do more harm than good (Jessim & Harber, 2005). Teacher expectations may predict student outcomes more because these expectations are accurate than because they are self-fulfilling. Jessim and Harber acknowledged that some teachers limit students by their low expectations.

Brookover and Lezotte (1979) provided an example of how teachers limit students. They examined six improving elementary schools and two schools that had declined in state assessment scores. The improving schools were found to emphasize the importance of basic goals while staff believed that each student could accomplish these goals. The declining schools did not emphasize goals and staff tended to believe that their students could not achieve them if they did have goals (Brookover & Lezotte, 1979). In a study of teacher expectations of classroom behavior, Lane, Pierson, Stang, and Carter (2010) found that teacher expectations vary little as a function of school risk. Teachers as a whole do appear to have uniformly high expectations, at least in regard to student behavior. Perhaps many teachers need to be more flexible in order to encourage student growth and achievement, which may be difficult to do in a society that is asking for stricter adherence to academic and behavioral standards.

One measure that has been suggested to ascertain the adequacy of teacher expectations is student assessments of the difficulty of their work. In an article admonishing educators to challenge students, Boser (2012) reported that 29% of eighth-grade math students nationwide said their math work was often too easy. Using that same statistic, it should be pointed out that 71% must have thought their math work was either just right or too difficult. The challenge should not be for teachers to uniformly raise the difficulty level of curriculum, but rather for teachers to adjust their curriculum to fit the needs of all of their students, to the 29% as well as the 71%. The importance of teachers being able to discern the needs of their students was discussed earlier under the topic of *Individualized Consideration* in the literature related to variables

Instructional Leadership

Instructional Leadership is a term that came into prominence in the 1980s and 1990s to encase responses to demands for better education prompted by *A Nation at Risk* and other calls for educational reform (Prater, 2004). In contrast to borrowing managerial techniques from business, the instructional leadership paradigm emphasized the unique aspects of education. In general, instructional leadership meant that principals should become directly involved in instruction. More specifically, instructional leadership came to include knowledge of effective schooling, commitment to quality instruction, coordination of curriculum, close supervision of classroom instruction, coordination of the school's curriculum, and close monitoring of student progress (Hallinger & Murphy, 1986). Teachers have attributed success in improving scores on standardized tests to a principal's instructional ability (Angelo, 2005). Knoll (2002) wrote a popular guide book for administrators on how to improve achievement test scores. Knoll's book appears to be from the instructional leadership perspective providing numerous worksheets and how to steps. The book does not refer to research to explain why certain things should be done. That may be because the predominant form of educational research is testimonials about certain methods and materials that appear to bring about desired outcomes.

The instructional emphasis of the effectiveness movement is important but Hallinger and Murphy (1986) said it was an overreaction to the previous emphasis on managerial leadership. However, both are important. Instructional leadership was the dominant paradigm during the 1980s and 1990s (Prater, 2004). Then amidst increasing calls for principals to be change agents, transformational leadership became the prospect

for better education. Transformational leadership was expected to develop personal commitment which would result in extra effort and greater productivity.

Achievement and Growth Scores on Colorado Tests

The more obvious manifestation of the dependent variable is school-wide achievement scores on the Colorado Measures of Academic Success (CMAS). These are available to the public on the Colorado Department of Education's website. The CDE worked with other states in using the Partnership for Assessment of Readiness for College and Careers (PARCC). In 2015, PARCC was a part of the more general CMAS. In 2016, CDE modified PARCC, dropped that moniker and just called the test CMAS.

Because of the importance placed nationally on STEM (Science, Technology, Engineering, and Math) this study uses the math scores from CMAS rather than the language arts scores. A unique manifestation of the dependent variable is the CDE's growth statistic. Castellano and Ho (2013) provided a general explanation of growth models as a means of evaluating school success. Along with other models, they describe the Student Growth Percentile (SGP) Model that is used in Colorado as a percentile regression. Students receiving a SGP of 80 performed as well or better than 80 percent of their academic peers. I used the growth statistic in the data analysis to test the predictability of the new transformational leadership model that I developed. Hapstonstall (2010) found a significant correlation between student grades and results on Colorado Student Assessment Program tests, so that there is a correlation between many teachers' assessments of academic achievement and the results on statewide tests.

The Transitional Colorado Assessment Program (TCAP) was administered in Colorado from 2012-2014. The original proposal was to use the TCAP results from 2012-14 as the dependent variable. Getting the proposal approved took longer than expected and it became more attractive to use the more recent CMAS test. The High Quality Test Project (HQAP) did not evaluate CMAS/PARCC in a traditional research manner (HumRRO, 2016). Rather, those evaluating the PARCC in the HQAP determined that PARCC placed a strong emphasis on the most important content of the Common Core State Standards which place an emphasis on college and career readiness. The HQAP further found that PARCC required students to demonstrate the full range of thinking skills called for by Common Core (HumRRO, 2016). The lack of traditional reliability information on PARCC and that many students opted out of the 2015 test are of some concern. However, the Colorado Department of Education modified the PARCC in the 2016 CMAS to where they were comfortable that it measured the standard objectives that they had established.

Covariates

Covariates are supplementary rather than the focus of this study so they will be discussed more briefly. Valentine and Prater (2011) included three principal demographics in their study that appear to be appropriate for my study also.

Principal Education (Covariate Predictive Variable)

Valentine and Prater (2011) found a positive relationship between higher principal education and better scores on the school's standardized test scores. The short principal survey also asked their level of education as Bachelor's degree, Master's degree, and doctorate.

Principal Experience (Covariate Predictive Variable)

The number of years of principal experience was not as great a factor as principal education in Valentine and Prater's 2011 study. Although experience has not been found to be a major factor in a few studies it was included in this study to see if previous findings can be confirmed.

Principal Gender (Covariate Predictive Variable)

Gender is a demographic item that may have some interaction with how predictive variables operate. Leithwood and Jantzi (1997) found that female principals were rated by teachers as being more transformational than male principals.

Based on the literature, five characteristics of schools will be included as covariables.

Socioeconomic Status (Covariate Predictive Variable)

Deutsch, Lawrence, and Henneberger (2014) said that socio-economic status should be considered in attempts to foster deeper relationships with youth. In an analysis of how principal leadership affects student achievement, Angelo (2005) found that there are high performing middle schools in low income areas. The operational definition of socio-economic economic status (SES) for this study will be the percentage of students who receive free and reduced lunches as reported on the CDE website for the 2016 school year.

School Size (Covariate Predictive Variable)

Leithwood and Jantzi (2009) found that evidence supports smaller schools, especially for socially and economically disadvantaged students. The CDE provides the number of students in each school.

School Location (Covariate Predictive Variable)

If results from my study would have been similar for different areas, then there would have been some confirmation of external validity. My sample was too small to compare different areas of the state.

Parental Involvement (Covariate Predictive Variable)

A study by Leithwood, McEltheron-Hopkins, and Jantzi (2004) found that principal leadership had a greater influence on improving schools than parental involvement in school decision making. Nevertheless, they acknowledge the importance of parental roles in the home.

Community Involvement (Covariate Predictive Variable)

Considerable research is now available which demonstrates that youth development is significantly affected by out-of-school activities (Mahoney, Vandell, Simpkins, & Zarret, 2009). In their study of adolescent growth from youth activities Dworkin, Larson, and Hansen (2003) found that activities contribute to development because youth are able to direct their participation. Rhew, Brown, Hawkins, and Briney (2013) found positive effects on youth being served by a community cares program. Principals were asked the following question concerning community involvement: What percentage of your students are involved in community activities such as Boys and Girls clubs, 4-H, or after school programs?

Review and Synthesis of Studies Related to Research Question

All of the variables just discussed have some theoretical or qualitative research support. No one study covers all the variables I found, although Klinginsmith (2007) and Valentine and Prater (2004) come close. Leithwood had several qualitative studies that

were referred to in the previous discussion. There was not as much research on principal behaviors as was expected. Because of its popularity and federal funding of mentoring programs from 1995- 2007 there was much research on the characteristics of mentors that benefitted mentees and mentor behavior that was a detriment to mentees. Relationship building was found to be beneficial and prescriptive mentoring was found not to be helpful. The lack of benefit from prescriptive mentoring could be related to the high expectations and common standards emphasis imposed on schools. Transformational leadership could offer benefits as it emphasizes relationship building as illustrated by the discussion on individualized consideration. Studies on emotional and relational intelligence discussed in that section have shown those factors to be associated with productive leadership. The Klinginsmith and Prator studies clearly pointed to a complex set of behaviors that are important for principal success, that not only goes beyond high expectations but also goes beyond emotional and relational intelligence. All of the studies provided likely answers to the question of what can be done to improve statewide testing scores. The demographic factors are mostly outside a principal's influence. The leadership variables are within the control of the principal.

Summary and Conclusions

Improvement on statewide tests may be as simple as the popular notion that high expectations are all that are required. However, a survey of education and leadership literature appears to indicate that success on statewide standardized academic tests is a complex matter. The general question is what principals can do to improve statewide test scores of their students.

Some of the major themes in the literature include developing relationships versus prescription, high expectation versus individualized consideration, and transformational versus transactional leadership. Social learning theory explains why prescribed activities that do not lead to success lead to an overall decline in achievement, whereas appropriately guided success will lead to further achievement. Expectancy theory explains the limiting factor of low expectations, but it does not explain why high expectations are sometimes not productive. Transformational leadership may be a needed correction to a previous emphasis on transactional leadership in the form of contingent reward.

It is known that transformational leadership is popular among principals and other leaders. It is less known what specific principal behaviors should be considered transformational and which of those are most effective. Little research specific to education has been done on the importance of relationship building which may be a key ingredient of transformational leadership. However, several studies were done when school-based mentoring was flourishing. Some of those studies found that relationship building mentors helped mentees more than prescriptive mentors. It was not known if relationship building principals have a more positive effect on teachers and students than prescriptive principals. Although it appears to be a complex matter, there is a lack of information on what is most important.

A major gap in the literature is a lack of quantitative studies. Several qualitative studies have been done to identify characteristics of principals in high-performing schools. Those do not include looking at low-performing schools to identify any principal characteristics that may be contributing factors. This study included a continuum of high

performing and low performing schools to see if there are principal characteristics that can be identified in the sample and how representative those results might be.

Chapter 3 is a discussion of a plan for my quantitative research project to identify principal leadership characteristics that may be correlated with Colorado's statewide testing. In Chapter 3, I will explain how I will test the theories of transformational leadership and high expectations through an analysis of principal survey data and CDE data as it relates to five hypotheses designed to increase knowledge on specific characteristics of transformational leadership.

Chapter 3: Research Method

Introduction

The purpose of this study was to provide data and analysis to help fill a gap in the existing literature so that policy makers, principal preparation institutions, and principals have additional research-based data upon which they can base decisions about what behaviors to avoid, maintain, or adopt in order to improve student achievement. More specifically, my objective in this statewide correlational study was to examine the thesis that other principal leadership factors, including relationship building, are more predictive of student achievement than high expectations. The thesis was broken into hypotheses that I tested using correlational statistical processes and SPSS software. I gathered secondary public data from the CDE website for the dependent variable. Data on the independent variables of most interest were gathered from a rating survey in which teachers assessed the degree their principals have the study characteristics. Results of the study could be important in efforts to help improve student achievement.

As I noted in Chapter 1, thousands of K-12 students in Colorado are among those across the nation who have not been meeting expectations for academic proficiency on standardized tests. The popular solution among educational policy makers and the public is to raise expectations. Research has shown that high expectations sometimes do not promote educational benefits (Tsiplakides & Keramida, 2010). There is a lack of research to indicate when high expectations are productive and when they are not. In contrast to the theory that high expectations are always appropriate, social learning theorists have stressed the importance of learners having success that will lead to self-efficacy and further success (Bandura, 1977). Social learning theory is compatible with

transformational leadership theory in that both stress the importance of mentors, such as school principals, modeling desired behaviors. National and Colorado educational policy emphasizes principal leadership accountability. Researchers have found the transformational leadership style to be the one preferred by most principals (Oranato, 2013), but there is a dearth of research to indicate what specific transformational leadership behaviors, or combinations of behaviors, can predict higher student scores on standardized tests. The problem I addressed in this project was the lack of research comparing leadership behaviors with standardized test results. I hypothesized that the relationship-building behaviors of transformational leaders correspond to productive use of high expectations, and that this leadership/expectation combination would correlate with higher standardized test scores.

The four major sections of Chapter 3 are as follows: Research Design and Rationale, Methodology, Operationalization, and Threats to Validity. In the Research Design and Rationale section, I address the research questions through comparing the outcome of scores on standards-based tests with likely predictor variables. In the Methodology section, I identify the population of school principals along with how I collected data on their characteristics from their teachers. In this section, I also explain the collection of secondary math scores data from the CDE 2016 CMAS. Then I describe the teacher questionnaires along with my plan for data collection and analysis of results from the leadership factors survey and CMAS. In the Threats to Validity section, I describe external and internal threats to validity, as well as how I respected statistical analysis parameters. In this section, I also explain ethical considerations I made throughout this study. The chapter closes with a summary of the study design.

Research Design and Rationale

This was a quantitative study using archival and survey data that I analyzed using correlational statistical methods. Variables were not controlled in this real-life circumstance, so I did not use an experimental design. The population was also not controlled, so I could not use a quasi-experimental design either. I used a correlational design because it provides strong external validity, satisfying a need in the public policy on educational leadership field of study. Congress and the Obama administration used findings from a large-scale correlational study by Bernstein et al. (2009) to end funding for mentoring programs despite smaller qualitative studies that showed modest positive effects from some mentoring programs (cf. Gray, 2012). I determined that if educational policy makers are only going to pay attention to correlational studies, then that is the type of study that is needed to influence public policy.

The Study Variables

Correlational design and analysis measures the degree of relationship between and among variables. The dependent, or outcome, variable of this study was student achievement as indicated by results from the Colorado Measures of Academic Success (CMAS). More specifically, the outcomes were indicated by the CMAS achievement and growth scores for math for eighth grade Colorado middle school students in 2016. I initially proposed using Transitional Colorado Achievement (TCAP) because I was concerned that CMAS scores might not be available. However, since the CMAS scores were available by the time principal data was collected, it seemed better to use the more recent data.

The main independent, or predictor, variables were principal leadership characteristics, which include beneficial modeling, inspirational motivation, systems thinking, individualized consideration, shared leadership, managerial leadership, transactional leadership, high expectations, and instructional leadership. Descriptions of these factors appear in Chapter 2. A sample of survey questions that I used to collect data are included in this chapter, and the full survey is in Appendix A.

In order to understand the possible effect of the leadership characteristic variables, it is also important to consider other possible effects on student achievement and how those possible effects might influence the leadership variables. In this study, I identified the other possible factors as covariates. Using covariates can be similar to an experimenter using control variables to more accurately assess the effect of the variable(s) of interest (Field, 2013). Covariates that may contribute to predicting the outcomes on the CMAS include socio-economic status, school size, school location, parental involvement, community involvement, principal education, principal gender, and principal experience. While these eight factors probably contribute to differences in CMAS scores, they are not generally factors over which the principal has immediate control. The exception is principal education, which may be related to the principal developing positive leadership behaviors. Principals should be able to control their leadership behaviors. I thought that including the eight control variables would help in the estimation of the effectiveness of the nine leadership variables.

Research Design and Connection to Research Question

The research question for this study was: To what extent, if any, are there correlations between nine principal leadership variables and the results on the

participating middle schools' CMAS 2016 math scores? The nine principal leadership variables included the five transformational leadership variables of beneficial modeling, inspirational motivation, systems thinking, individualized consideration, and shared leadership, and the four non-transformational leadership variables of managerial leadership, instructional leadership, transactional leadership, and high expectations. Using the quantitative correlational research design, I examined the relationship among variables in the manner described by Creswell (2009). Study constraints helped define the type of quantitative study needed to answer the research question (see Campbell & Stanley, 1963).

Constraints

The correlational/regression design allows the researcher to draw conclusions about whether or not certain principal behaviors are associated with student outcomes on standardized tests. Statistical analysis can help establish the probability of that relationship, but statistical analysis cannot in itself demonstrate cause and effect (Gorard, 2001). However, Campbell and Stanley (1963) reported that a justification for causation can be made using a correlation design, as in the case of smoking and lung cancer. The case for causation can be made stronger by incorporating other plausible explanatory factors (covariates) into the study (Campbell & Stanley, 1963). As the possible effects of the eight covariate effects were quantified, the relative effects of the nine leadership factors could be more accurately assessed.

I gathered quantitative data from the CDE website for the dependent variable along with covariate data including school size, school location, and socioeconomic status as indicated by the percentage of students enrolled in reduced-cost school lunch

programs. I gathered independent variable data via two surveys. I used one survey to gather demographic information from principals, and the other survey to gather teachers' assessments of the leadership qualities of their principals through a Likert-like instrument. After approval from Walden's IRB (#02-02-17-0169831), I sent letters to Colorado school district superintendents asking for their permission to contact their principals and the principals to then contact their teachers with the opportunity to complete an anonymous SurveyMonkey assessment.

Consistency with Other Designs in Studies on Principal Effectiveness

In the summary of the previous chapter, I noted that the only quantitative research on the subject of principals and statewide testing were projects by Ergle (2012), Klinginsmith (2007), and Prater (2004). Ergle (2012) used statewide testing, but only covered a metropolitan area. Only Klinginsmith's (2007) and Prater's (2004) studies were statewide. The methodology and some of the analysis in this project were similar to the Klinginsmith and Prater studies. In Chapter 2, I discuss a number of qualitative studies that concern principals and statewide test scores, including those by Angelo (2005) and Jantzi and Leithwood (1997). This project was aligned with many of those qualitative studies, but I took a quantitative approach. In one of the later studies, Ergle (2012) maintained that there is still a need to define what it means to be an effective school leader, including the traits that can be developed that will lead to academic success for students.

Rudestam and Newton (2007) contended that a study should advocate for a position. They did not recommend a search-for-whatever-might-turn-up approach to research. Based on the literature review, I determined that all nine leadership factors

could significantly and positively correlate with math achievement and growth scores on the CMAS. When proposed, this study appeared to be the next logical step in further exploring the role of high expectations and transformational leadership in contributing to improvement on statewide standardized tests.

Defense of Intervention

Since this was a correlational study, there was no intervention in the experimental sense of the word. However, the variables of interest do form a possible intervention. The behavior of the principal is the factor most under his/her control. The nine independent variables in this study are a fairly exhaustive categorization of principal behaviors, each of which has been indicated in other studies as contributing to student success. This study helped delineate which factors are most important by analyzing them in one project. My analysis of groups of factors could help to provide a better model of how variables and covariates interact so that policy makers and principals have a better understanding of the interactions of principal behaviors and demographic factors on student achievement. This project required much work but little intervention in order to find information to aid in understanding factors that can influence student achievement.

Methodology

Population

The target population was principals of sixth through eighth grade middle schools in Colorado. Initially, I had hoped that principal participants would be limited to those who had served in their present capacity for 3 or more years so there was some opportunity for the principal to influence the TCAP scores. However, the TCAP was only administered 2012-2014, and with only eight participants, I accepted all principals and

used 2016 CMAS scores instead. The study population was more than 150 in 2016 as determined by a list of principals along with their contact information on the CDE website. The sample of eight was the number of principals who responded to my invitation to participate in the study.

Teachers and students were not a part of the participating study population. However, they were tangential to the study and their numbers are interesting. The principals were asked to give their teachers an opportunity to anonymously respond to a survey, which could have involved as many as 30,000 teachers in those approximately 150 schools. Students in that many schools comprise some 800,000 children. Those numbers would be overwhelming if it were not for the extensive collection, analysis, and publication of data by the CDE. In 2014, the focus of this project was going to be TCAP scores and the principals who served at that time. TCAP was replaced in 2015 by the multi-state Partnership for Assessment of Readiness for College and Careers (PARCC). Instead of using the PARCC moniker, the state of Colorado used the term CMAS. In 2016 Colorado modified CMAS to be more aligned with the state's specific academic standards. Because of the concern for Science, Technology, Engineering, and Math (STEM), I focused on CMAS math scores.

Sampling and Sampling Procedure

The first consideration in a sampling strategy is to decide if a sample is prudent (Gorard, 2001). If at all possible, Gorard encouraged researchers to use the whole population as participants. Having a large sample reduces standard error and helps to assure that assumptions will be met so that parametric statistical tests can be used legitimately (p. 155). The sampling frame and sample was proposed to be the same in this

project so that the whole population rather than a sample of the population would be studied. Considering the low response rate, if I had begun by pursuing only a sample, the number of participants could have been even less. After considering time, finances, and the goals of this proposal it appeared to be feasible and desirable to contact all the principals who served during CMAS testing. However, the IRB wanted a letter of cooperation from school districts first so only those principals whose district superintendents agreed to cooperate were contacted. That reduced the number of principals contacted from 150+ to 32. Past and current principal school addresses and phone numbers have been listed on the public CDE website. The actual number of principals available for the study and the number who would respond was not known until the proposal was approved for data collection.

Using the same advice from Gorard (2001), the plan was to use all the teacher responses. SurveyMonkey provided me with a mean average of the ratings made by respective teachers. The principal was asked to give the survey link to all his/her middle school teachers in order to reduce the possibility of bias from just giving the survey link to part of the teachers.

Power Analysis

The G*Power (2009) version 3.1.9.2 computer program was used to calculate the sample size needed to conduct various statistical tests that accommodate multiple predictor variables. An alpha of .05 and a power of .95 are commonly used levels to indicate significant findings (Field, 2013). Valentine and Prater (2011) found effect sizes for a similar study to be above .20. Using an effect size of .15 should assure a large enough sample.

With G*Power (2009) set to the above levels and 18 predictor variables using linear multiple regression for a fixed model single regression coefficient the reported sample size needed was 74, which appeared to be possible to achieve out of a sample frame of more than 150. Field (2013) said a population of 77 was adequate for a similar type of study. The more that would respond the more likely that there would be significant findings. If the n would have been 74, it would be highly likely that significant findings would result. If the n were to be less than 74 then the plan was to analyze fewer variables at a time. Estapa (2009) nearly had significant results in a similar study with an n of 6 so the plan was to proceed even if only that many participated. With only eight participants it was remarkable that there were several significant correlations in the data analysis.

Procedures for Recruitment, Participation, and Data Collection

I contacted superintendents of school districts in order to gain support for contacting their principals. A sample letter is included in Appendix C along with a Letter of Cooperation. I think if I had pressed the point the IRB would probably have agreed to simply asking superintendents to pass the information on to principals and then I would not have needed a Letter of Cooperation, but it seemed more professional to ask districts for a Letter of Cooperation. Superintendents were asked to confirm principal names and contact information as well as inform staff of the research project. From those approving districts, letters were sent to principals explaining the research project, how the data would be used, how confidentiality would be maintained, and that participation was voluntary. Principals were asked to sign a Principal Consent Form and to fill out the Principal Demographic Questionnaire both of which are found in Appendix D. Principals

were also asked to provide their teachers with a link to SurveyMonkey so that the only identifier of the teacher surveys was the school. Individual teacher survey respondents remained anonymous to me, and therefore to principals and others. The Likert-type survey for teachers had 34 items to rate the degree to which principals demonstrated certain behaviors. The teacher survey began with information on how their anonymity would be protected and that they were implying consent by filling out the survey which they could cancel at any time.

Data from principals was dated as it was collected to see if there was some pattern that may help in estimating the impact of those who did not respond at all. No pattern on the timing of the few responses were found. Phone calls and emails were made to principals to follow up introductory letters in order to increase participation. Data was entered in SPSS on my password protected home computer. I entered data from Survey Monkey directly into SPSS.

A self-reporting leadership questionnaire was developed by Bass, Waldman, Avolio, & Beeb (1987) but I decided not to use it for this study. Self-reporters may tend not to report negatives on themselves (Field, 2013). Prater (2004) and Klinginsmith (2007) used teacher reporting surveys. I wanted to replicate and expand on their studies and received permission to do so (Appendix B). Prater (2005) used a minimum of two returned surveys per principal. Kinginsmith (2007) used a minimum of three. Both had teacher return rates above 25% (Prater, 2005; Klinginsmith, 2007). With so few principal participants I accepted any number of teacher responses. The question of how many teachers' surveys to use is not equivalent to deciding how large a sample is needed as researchers have found a consistency in teacher responses (Klinginsmith 2007;

Leithwood 2005; Valentine & Prater, 2011). I did not limit the number of teacher responses because SurveyMonkey calculated the mean average even when a dozen teachers responded.

Principals were asked to complete a short survey to obtain demographic data on themselves and on their school that was not available on the CDE website. General results from the study will be made available to participating principals. Follow-up contacts were made to request previously requested information from principals. There were no follow-up interviews for new information.

Since the gap identified for this study to fill was a statistically valid set of correlations, I made an effort to have as large a survey return rate as possible. I consulted survey texts by Babbie (1990) who discussed increasing validity and Dillman, Smyth, and Christian (2009) who discussed practical ways to increase response. Some of the things advocated by Dillman et al. are to: communicate as many benefits to the completion of the survey as possible in a brief space in order to motivate various types of people; plan pre-survey and post-survey follow-up reminders; consider a nominal gift; minimize requests for sensitive information; consider sponsorship; and ask for help (Dillman, Smyth, & Christian (2009).

There would not be any exit procedures to debrief nor follow-up to gather more data. A thank you was incorporated into the end of the SurveyMonkey program. Letters of appreciation will be sent to participating superintendents and principals. A report will also be sent to superintendents and principals when the project is completed.

Archival Data

Secondary data was used for the outcome variable of results on the CMAS math results from 2016. The secondary data was available to the public without permission. Secondary data was also used for some of the school demographics which are public and can be found on the CDE website with no need for permission for access. In order to report CMAS results in a useful manner, Colorado researchers have developed a growth statistic that was used as one manifestation of the dependent variable. CDE also rates school achievement scores on a percentage basis. CDE reports achievement and growth for math and reading. I primarily analyzed the math scores in comparison to principal leadership factors and demographic factors. Data was gathered from the CDE website on school size and socio-economic status as defined by use of free and reduced-cost lunches. It had been proposed to compare school locations, but there was not enough response to do that well.

Colorado Measures of Academic Success Tests

In order to insure content validity, the CDE met with educational experts to determine common content for CMAS. Items were tightly aligned with the Colorado Model Content Standards. Irrelevant constructs were minimized and under-represented constructs were developed and reviewed in order to insure that content was equitably represented.

Instrumentation and Operationalization of Constructs

The independent variables were comprised of leadership factors as identified by results from adaptations of the Principal Leadership Questionnaire (PLQ) developed by Jantzi and Leithwood (1996), a factor of transactional leadership, plus leadership factors

as identified from adaptations of the Audit of Principal Effectiveness (APE) developed by Valentine and Bowman (1989). The PLQ factors included beneficial modeling, inspirational motivation, systems thinking, individualized consideration, and shared leadership. The APE factors included management and instructional leadership. Each of the leadership factors were tested with 2016 CMAS achievement scores on math.

Part of the adaptation of the Principal Leadership Questionnaire by Jantzi and Leithwood (1996) was the addition of items from the Audit of Principal Effectiveness by Valentine and Bowman (1989). I contacted Drs. Leithwood and Valentine, receiving permission from each of them to use their surveys on this project. Copies of these approval letters are included in Appendix B.

Principal Leadership Questionnaire Instrument

Most of the questionnaire to be used in this study was developed by Jantzi and Leithwood (1996). Leithwood has led the way in adapting transformational leadership ideas to education (Valentine & Prater, 2011). Jantzi and Leithwood's (1996) use of the PLQ was primarily to explain teacher's perceptions of principal leadership. For the purpose of their study, Jantzi and Leithwood (1996) gave much attention to validity and reliability of the questionnaire. Particularly, Jantzi and Leithwood (1996) looked for factors that would influence teachers' perceptions of their principal's leadership abilities.

Operationalization

Achievement (outcome variable). The achievement variable is here defined as the score given to middle schools by the CDE which calculates the percentage of students who score proficiently on the CMAS. Beginning in the spring of 2015, Colorado joined a dozen other states in administering the Partnership for Assessment of Readiness

for College and Careers (PARCC). In Colorado the PARCC was part of CMAS. The PARCC test became controversial and a modified test was administered by the state in 2016. CMAS results were the focus of this study. The CDE achievement statistics were available to the public for the CMAS.

Growth (outcome variable). The CDE growth statistic was used as a secondary manifestation of the dependent variable in this study. The growth variable is the score given to middle schools by the CDE which calculates the change in scores from year to year of those students who score proficiently on the Colorado standardized testing. I used school growth scores for math in 2016. Researchers at CDE developed their growth statistic which is described as a Student Growth Percentile (SGP) Model (Castellano & Ho, 2013). The calculation of SGP involves the estimation of 99 regression lines that are used to predict the median growth for students in the next grade. Median growth is aggregated and reported for various groups, including middle schools. The growth statistics were available to the public for CMAS on the CDE website.

Beneficial modeling (independent predictive variable). The beneficial modeling term describes what some theorists call charisma and Bass called idealized influence. Followers identify with leaders and want to follow them. Beneficial modeling was measured by teacher responses to items from the Principal Leadership Questionnaire, such as: The principal has provided a good model for their faculty to follow. Jantzi and Leithwood (1996) reported that the Chronbach's alpha for their three modeling items was .86. The proposal originally called for dividing up the responses into three categories of high, medium, and low. These would have been categorical variables which would not

have been as useful as the raw continuous data that was used to calculate Pearson's correlation.

Inspirational motivation (independent predictive variable). The term inspirational motivation describes how transformational leaders motivate and inspire those around them by providing meaning and challenge to their followers' work (Bass, 1998). The leader insures that followers understand their importance to the organization and encourages them to reach their full potential. Inspirational motivation was measured by responses to items from the PLQ such as: The principal has given the faculty a sense of overall purpose for its leadership role. Jantzi and Leithwood (1996) reported a Chronbach's alpha of .88 for their inspirational motivation items.

Systems thinking (independent predictor variable). Senge's (1994) concept of systems thinking and the development of a learning organization describe what Bass (1998) and Leithwood (1996) termed as intellectual stimulation. Followers are led to be innovative by questioning assumptions, reframing problems, and trying new approaches as they see their part in the whole organization. Followers are not criticized for simply having different ideas than their leader. Systems thinking was to be measured by teacher evaluations of the following items.

Items from the PLQ included:

1. The principal has provided information that helps me think of ways to implement the school's program.
2. The principal has challenged me to reexamine some basic assumptions I have about my work in the school.

3. The principal has provided for extended training to develop my knowledge and skills relevant to being a member of the school faculty.

An item from the literature is:

1. The principal has encouraged me to be creative by not criticizing my ideas simply because they are different.

Jantzi and Leithwood (1996) reported a Chronbach's alpha of .77 for their items.

Individualized consideration (independent predictor variable). Individualized consideration is defined here as paying special attention to each individual follower's need for achievement and growth by acting as a coach or mentor who offers time and support to individuals to achieve their personal goals, especially those that may have been neglected in the past. Individualized consideration was measured by teacher responses to items on the PLQ, such as: The principal has personally helped me to develop my strengths. Jantzi and Leithwood (1996) reported a Chronbach's alpha of .82 for their individualized consideration items.

Shared leadership (independent predictor variable). Shared leadership is defined here as promoting cooperation in fostering the acceptance of group goals. Shared leadership was measured by items from the PLQ such as: The principal has worked toward whole faculty consensus in establishing priorities. Jantzi and Leithwood (1996) reported a Chronbach's alpha of .80 for shared leadership items.

Managerial leadership (independent predictor variable). Managerial leadership is here defined as organizing the day-by-day operation of the school to provide an orderly environment in a well-equipped school. Managerial leadership was measured

through responses to survey items from the Audit of Principal Effectiveness (APE) developed by Valentine and Bowman (1989).

Survey items from the APE selected for this survey include:

1. The principal has implemented federal, state, and district policies including systematic procedures for staff appraisal.
2. The principal has managed the day-by-day operation of the school to provide an orderly environment in a well-equipped school.
3. The principal has the ability to organize activities, tasks, and people.

Valentine and Bowman (1989) reported a Chronbach's alpha of .86. However, I reduced 64 items down to 3 so that alpha number is rather meaningless. I cut the number of items because many of them were redundant with Jantzi and Leithwood and others were not directly relevant to this particular study.

Transactional leadership (independent predictive variable). Transactional leadership is here defined as the initiative to make contact with others for the purpose of exchanging valued items: subsidies for campaign contributions, salaries for teaching, grades for school work (Burns, 1978). The concept of transactional leadership meshes well with the scientific behaviorism advocated by Skinner (1971). Behavior is shaped and maintained by its consequences to the extent that environmental contingencies explain away the concept that man is autonomous (Skinner, 1971).

Based on Burns' (1978) description of transactional leadership and Skinner's (1971) description of contingency-based behavior, I developed three items that demonstrate a progressively more intense use of transactional leadership:

1. The principal has praised people for exhibiting desired behavior.

2. The principal has provided incentives for meeting objectives.
3. The principal has withheld privileges for non-compliant behavior.

There is face validity in the items; they correspond to the concept of transactional leadership.

High expectations (independent predictive variable). High expectations are here defined as anticipating significant results. Items from the Principal Leadership Questionnaire selected to indicate high expectations include:

1. The principal has shown us that there are high expectations for the school's faculty as professionals.
2. The principal has not settled for second best in our performance of our work as the school's faculty.

Jantzi and Leithwood (1996) reported a Chronbach's alpha of .73 on high expectation items.

Instructional leadership (independent predictive variable). Instructional leadership is here defined as including knowledge of effective schooling, commitment to quality instruction, coordination of curriculum, close supervision of classroom instruction, coordination of the school's curriculum, and close monitoring of student progress (Hallinger & Murphy, 1986; Prater, 2004). The items from the APE were reduced from eight to three so that items in this category would not overlap with items in other categories.

1. The principal has knowledge of the general goals of all the curricular areas.
2. The principal has instructional observation skills that provide the basis for accurate assessment of the teaching process in the classroom.

3. The principal has the ability to provide suggestions for improvement when criticizing poor practices.

Valentine and Bowman (1989) reported a Chronbach's alpha of .85 on instructional improvement items.

Socioeconomic status (covariate predictive variable). The operational definition of socio-economic status (SES) for this study is the percentage of students who receive free and reduced lunches as reported on the CDE website for the 2016 school year.

School size (covariate predictive variable). The CDE provides the number of students in each school.

School location (covariate predictive variable). If I had had acquired a large response, analysis of the responses in different areas could have added some confirmation or disconfirmation of external validity. With the small response a comparison of areas was not made.

Principal education (covariate predictive variable). The short principal survey asked for the principal's level of education as Bachelor's degree, Master's degree, or Doctorate.

Principal gender (covariate predictive variable). Principals were asked to identify their gender as male or female.

Principal experience (covariate predictive variable). Principals were asked for the number of years of experience. I originally proposed to divide the years into categories, but it was better to evaluate correlation by leaving the years as continuous data.

Parental involvement (covariate predictive variable). Principals were asked, "What percentage of parents are involved in their children's education in your school?"

Community involvement (**covariate predictive variable).** Principals were asked, "What percentage of your students are involved in community activities such as Boys and Girls clubs, 4-H, and after school programs?"

Simple Demographic Survey

Principals were asked to fill out and return a simple demographic survey that included the covariate predictive variables of principal education, principal experience, principal gender, parental involvement and community involvement. The first three are straightforward and should have construct validity. The last two are not as straightforward and did not have as much validity, but not much weight was intended to be put on them in the overall scheme of the project. One open ended question was included with the survey concerning what they would like to communicate to legislators. Several of the principals advocated for more resources.

Data Analysis Plan

Data was entered into SPSS. I used the general linear model of $outcome_i$ = (model) + $error_i$. Field (2013) suggested looking at data graphically before running other analyses. Four procedures that I used early in the analysis were: (1) develop scatterplots, (2) clean data, (3) run significance tests, and (4) examine residuals for homoscedasticity and independence.

I looked for outliers that would bias the results. As I examined scatterplots of the data, I looked at outliers and made minor adjustments.

While looking for outliers on scatterplots I also checked to see if the variables were normally distributed. A researcher can use logarithms, square roots, or inverses of the variable to give them a more normal distribution. However, using those methods would decrease the power of the study, so I was happy I did not have to use them. One of the reasons I was working toward a large sample was to assure normality. Fortunately, the dependent variable had a normal distribution despite its small size.

The SurveyMonkey means of each survey item were reported to the hundredth so that each of the 32 items could be analyzed using SPSS for determining their significance and Pearson correlation. In SPSS, the b coefficients in regression are automatically calculated with associated t tests, so significance and strength of correlation can be seen in the same output. In Chapter 4, I reported the Pearson's Product-Moment Coefficient of Correlation (r) and the significance of means of the items that composed each principal leadership characteristic. A backup plan was to use Kendall's Tau if the data was not parametric. However, the data was parametric so I just used Pearson's correlation statistic.

Research Question and Hypotheses

1. To what extent, if any, are there correlations between nine principal leadership variables and the results on participating middle schools' Colorado Measures of Academic success math scores from 2016? The nine principal leadership variables include the five transformational leadership variables of beneficial modeling, inspirational motivation, systems thinking, individualized consideration, shared leadership and the four non-transformational leadership variables of managerial leadership, instructional leadership, transactional leadership, and high expectations.

The study evaluated the following hypotheses:

H_01: High expectations will be more highly correlated with CMAS scores than any other leadership factor including managerial leadership, instructional leadership, transactional leadership, attractive modeling, inspirational motivation, systems thinking, individualized consideration, and shared leadership.

H_A1: At least one other leadership variable including managerial leadership, instructional leadership, transactional leadership, attractive modeling, inspirational motivation, systems thinking, individualized consideration, and shared leadership will be more highly correlated with CMAS scores than high expectations.

H_02: Regression analysis will not correlate transformational leadership characteristics as together influencing CMAS scores.

H_A2: Regression analysis will correlate transformational leadership characteristics as together influencing CMAS scores.

H_03: High expectations will be highly correlated with CMAS scores regardless of the relative presence or absence of individualized consideration.

H_A3: High expectations will be more negatively correlated with CMAS scores when individualized consideration is lowest and more positively correlated with CMAS scores when individualized consideration is highest.

H_04: As the covariates of student socio-economic status, school size, school location, principal education, principal experience, principal gender, parental involvement, and community involvement are introduced into SPSS calculations, independent variables will no longer continue to be correlated with CMAS, while high expectations will continue to show the highest correlation with CMAS.

H_A4: As the covariates of student socio-economic status, school size, school location, principal education, principal experience, principal gender, parental involvement, and community involvement are introduced into SPSS calculations, independent variables will continue to show correlation with CMAS scores, with at least one other leadership factor showing a greater correlation than high expectations.

H_05: The statewide correlations of independent variables and covariates will not help to explain the three-year trends of CMAS scores of 12 randomly selected schools for the study.

H_A5: The statewide correlations of independent variables and covariates will help to explain the three-year trends of CMAS scores of 12 randomly selected schools for the study.

Statistical Tests

The Colorado Department of Education (CDE) reports CMAS results in percentages. This interval data allows data to be more finely analyzed. There is some question as to whether results from a questionnaire scale can be considered as interval data. SurveyMonkey reported the means carried out two places so that it was available in three digits. Data generally varied enough to make precise comparisons possible. Klinginsmith (2007) and Prater (2004) used Pearson product-moment correlation testing. I was unable to find a description by Klinginsmith (2007) or Prater (2004) on how well their data met the assumptions in order to legitimately use the Pearson product-moment analysis.

The types of statistical analysis tests that can be properly used for data analysis depend on the number and nature of the variables. I used statistical tests that accommodated multiple predictor variables.

Interpretation of Results

The statistical significance was calculated along with strength of correlation so that I did not need to do separate t-tests in SPSS. I simply needed to make note of the significance statistic in order to initially determine if it was possible to reach any conclusions on whether or not to reject the null hypothesis. Any statistically significant results were further observed to see if those correlational strengths match any of the hypotheses. The acceptance or rejection of hypotheses was at the heart of the proposed study. Null hypotheses that were rejected and alternative hypotheses formed the basis for data analysis.

Threats to Validity

Aristotle said that an argument cannot be proven or disproven. It can only be shown to be valid or not valid, or in post-modern thinking, more likely valid or more likely not valid. The nature of this research project would provide evidence that is relatively strong in external validity while being weak in internal validity.

Threats to the External Validity of the Dependent Variable

Every proctor of CMAS was required to follow a strict protocol that assured that students throughout the state were exposed to the same test conditions. Exposure to similar tests may help students to make minor improvement from one year to the next, but a far greater difference in test results will be from mastery or lack of mastery of skills that are of increasing difficulty in later grades.

Threats to the External Validity of the Independent Variables

The nature of a survey presents challenges to validity. Some validity comes from the development of the survey instrument using qualitative methods which inherently have more internal validity than quantitative methods. The developers of most of the survey items in this project spent many years putting together their questionnaires. Jantzi and Leithwood (2005) who developed most of the survey items for this study conducted a large international qualitative study to increase the validity of their questionnaire concepts. The studies in Missouri could add external validity to results from this study.

Threats to Internal and Construct Validity of the Dependent Variable

The CDE received much input from state educators to make CMAS more realistic in evaluating student achievement. CMAS is aligned closely with the state's content standards that educators are required to use as a basis for their lessons.

Internal Validity of the Independent Variables

Valentine and Prater (2011) reported consistent results from teachers on their respective principals. Survey validity was reported earlier with each predictive variable.

Validity of the Covariates

For the most part, the covariates are simple demographic data so there should be minimal threats to their validity.

Ethical Procedures

No information was gathered from individual children so there was no risk to them, yet to the extent principals gain information to help them improve schools, children will benefit. School districts were sent letters in order to gain permission to gather survey information from their middle school principals and teachers. Principal contact

information is public and so are school results on the CMAS. However, I have been keeping individual principal and school information confidential. Since principals are offering the opportunity for teachers to anonymously respond to a SurveyMonkey questionnaire their privacy was assured. After all the data is gathered, even public information identifying the individual school and principal will be deleted or continue to be kept confidential for official reviewers. Data will be handled in my home office which is secure.

Agreements

Data to be used to indicate school achievement was obtained from a public website. Therefore, no agreement had to be made with the CDE to use that data. I contacted researchers at the CDE, so they know my plans and they have advised me concerning the need for their IRB to review my project. In a phone conversation on July 14, 2014, the CDE director in charge of data said that I should not go through a CDE IRB process unless I wanted to access individual student data and that CDE IRB approval of access to individual student data would be unlikely. I did not need nor desire individual scores for my project. Colorado is a local control state. As soon as I had Walden IRB approval I contacted individual school districts for permission to gather information from their middle school principals and teachers. A letter was sent to school district superintendents asking for their support. A draft letter and letter of cooperation are in Appendix C.

Data collected from principals is kept confidential by assigning an ID # to the principal and school that does not mean anything to anyone but myself. I asked principals to forward a SurveyMonkey link to their teachers. Individual responses to the survey

were kept track of by SurveyMonkey so that the identity of the teacher respondents remained unknown to me; only the school was known to me. I will share general results from the study with principals, but they will not know how their teachers responded either individually or collectively.

I obtained Walden IRB approval number 02-02-17-0169831 before collecting data from principals. I gave written explanation to principals concerning how the information I would receive from them would be used and how that information would be kept confidential. I also explained to them how survey information from teachers will be protected. Participation in my project by principals and teachers was strictly voluntary. I had planned to ask SurveyMonkey to build in an implied consent feature into the teacher survey, but instead principals forwarded the consent information along with the access code to SurveyMonkey.

Data collection from principals and teachers occurred over the space of a few weeks. They either participated or not so withdrawal was not thought to be a problem. However, some principals who were initially interested did not want to disturb their teachers. Reminders were made by phone and email to principals to increase the response rate.

I am the only one who has complete access to all the data, except as required by Walden officials checking on the accuracy of my work. I will be careful not to share confidential information that is not absolutely necessary for them to have. Data was quickly put into databases that could be shared with my committee and others without divulging confidential information.

Data will be kept on a password protected computer in my home office which is secure. I do not stand to directly gain financially by the results of one hypothesis over another. I had an informed opinion of what the results might be. To the extent that results differed from what I anticipated I was simply better informed and better able to contribute to future knowledge in the field of principal leadership.

Summary

Researchers have identified at least 18 factors that could influence a student's performance on standardized achievement tests in addition to the student's desire and ability. Because of increased political pressure on principals, nine factors that are mostly under the principal's control are of particular interest. The large amount of data available and computer software have made the analysis of complex multifactor models possible. The model that was studied to begin with defined transformational leadership by five characteristics, which were compared individually and as a group with other principal leadership factors, principal demographics and school demographics. I hoped that the analysis of so many factors in one study would aid principals in prioritizing the things they can do to improve student academic performance.

Student achievement data and most of the demographic data was gathered from the CDE website. Some demographic data was collected from principals. I asked principals to forward a SurveyMonkey link to their teachers in order for them to answer the 34 item PLQ that was used to rate their respective principals on nine leadership characteristics. I entered the student achievement data and the demographic data from the CDE website, along with the results from the principal demographic survey and the PLQ, into SPSS. I used SPSS descriptive statistical analysis to test whether or not the

assumptions of linearity and normality were met so that the use of parametric or non-parametric analyses would be appropriate. The statistical analyses were used to evaluate each of my five hypotheses, and the results are reported in Chapter 4.

Chapter 4: Results

Introduction

Chapter 4 includes a discussion of the collection of data, including the timeframe and discrepancies between the proposed plan and what I did. I report the demographic characteristics of the sample in terms of how well it represented the population. Then, I report the results, beginning with descriptive statistics that show statistical assumptions were met so that some hypotheses could be tested using SPSS to find Pearson's correlation statistic. I have organized findings by hypotheses, which I evaluated to answer the research question.

The purpose of this quantitative study was to compare the degree of correlation among leadership behaviors and results on Colorado standardized tests. More specifically, my objective in this statewide study was to test the thesis that there are other principal leadership factors that are more predictive of student achievement than high expectations.

I developed the following research question to guide the study: To what extent, if any, is there a correlation between nine principal leadership variables and results on the participating middle schools' CMAS scores from 2016? CMAS was administered in all Colorado public schools to students in Grades 3–8. I used eighth grade math scores as reported on the CDE website to answer the research question.

I developed five hypotheses to guide the examination of data concerning the correlation of principal leadership and student achievement.

H_A1: At least one other leadership variable including managerial leadership, instructional leadership, transactional leadership, beneficial modeling, inspirational

motivation, systems thinking, individualized consideration, and shared leadership will be more highly correlated with CMAS scores than high expectations.

H_A2: Transformational leadership characteristics will together influence CMAS scores.

H_A3: High expectations will be more negatively correlated with CMAS scores when individualized consideration is lowest and more positively correlated with CMAS scores when individualized consideration is highest.

H_A4: As the covariates of student socio-economic status, school size, school location, principal education, principal experience, principal gender, parental involvement, and community involvement are introduced into SPSS calculations, independent variables will continue to show correlation with CMAS scores, with at least one other leadership factor showing a greater correlation than high expectations.

H_A5: The statewide correlations of independent variables and covariates will help to explain the three-year trends of 12 randomly selected schools for the study. Corresponding null hypotheses were also constructed.

Data Collection

On February 12, 2017, I received conditional approval from the Walden IRB to proceed with the study. On February 15, I mailed invitations to the 178 Colorado school district superintendents requesting that they participate in the study. Eight districts agreed to participate in the study, and the IRB gave final approval for the project. The eight districts included 32 middle schools. I sent surveys and consent forms to those 32 principals. I followed up with emails, phone calls, and more emails. Six principals filled out surveys and gave their teachers consent forms and a link to SurveyMonkey. Other

principals said they were willing to participate but did not want to bother their teachers. Since other studies in my literature review used self-reporting, I proposed that those principals fill out the teacher form and three did so. That increased the sample size to nine schools. However, in order to protect student confidentiality, the CDE does not openly publish the CMAS results of class sizes less than 16 students. One of the nine schools had less than 16 students in the eighth grade, so CMAS data was not available for that school. That left data available from a total of eight middle schools for the study. SurveyMonkey responses for those schools began April 5 and ended May 17. The response rate of superintendents was 4.5%. The response rate of principals in the approval districts was 25%. The use of three Principal Leadership Questionnaires by self-reporting was the only discrepancy between the outline of procedures in Chapter 3 and what actually took place.

Characteristics of the Sample

The most important characteristic of the sample was that four schools were above the state average on the 2016 math CMAS, and four schools were below the state average for the 2016 math CMAS. The participating middle schools are located throughout Colorado. There are two from Southwestern Colorado, one from Northwestern Colorado, one from Eastern Colorado, one from the Colorado Springs area, one from the Denver area, and two from the Northern Front Range. The schools ranged in size from 129 students to 953 students. Smaller schools are not represented because the CMAS results are not public. The amount of free and reduced lunches ranged from 34.9% to 80.9%. More of the demographics will be discussed under the heading of covariates. Taking into consideration the small size of the sample, it was remarkably representative of the state.

Covariates

The proposal was to look at eight demographic factors that might have an impact on the correlation of principal characteristics with CMAS results. None of the eight factors were found to have a statistically significant correlation at the .05 level for this sample. However, some of the demographic factors did help to describe how representative the principal sample was to the middle school principal population in Colorado. The sample was too small to facilitate comparisons between areas of the state, but looking at the wide dispersion of sample schools as described in the last section helps to make a case that the sample was representative of the population.

Half of the 32 middle school principals who I contacted were male and half were female. The sample had 3 females and 5 males. Of the females, one led a school with CMAS scores that were above average and increasing, one led a school with scores that were below average and slightly decreasing, and one led a school that was below average and decreasing. Of the male principals two led schools with above average scores and increasing, one led a school with a little above average and slightly decreasing scores, and two led schools with below average and decreasing scores. Gender was not a predictor of CMAS from this sample, and the sample was only slightly over-represented by males.

One of the participants had a doctorate and two more were about to complete theirs. Statewide only 5% of K-12 principals have doctorates, so they were over-represented in this sample. Principals working on or having achieved doctorates are probably more sympathetic to degree candidates' needs to have participants to complete their research. The principal who had a doctorate had the second highest CMAS score.

One of the candidates had an above average CMAS score and one had a lower than average score. There were not enough data points to try to make a meaningful correlation. The preceding data appear, on the face, to support doctoral completion as contributing somewhat to better CMAS results for some principals.

The range of principal experience was 4 to 19 years. The percentage of free and reduced lunches range was from 35% to 81%. The principals' estimation of parental involvement ranged from 25% to 80%. The principals' estimation of community involvement ranged from 30% to 90%. The wide range and normal distribution of covariates helped to verify the representative nature of the sample, while the less than .05 significance was a reason to leave them out of the formation of a model.

Results

The following research question guided the study: To what extent, if any, is there a correlation between nine principal leadership variables and the results on the participating middle schools' CMAS 2016 math scores? The first step in answering the research question was to compare covariates to leadership as a whole, which I have represented in Table 1. Because of the small sample, the only covariates that were conducive to multiple regression analysis were percentage of free and reduced lunches and number of students. In order to assess the prediction of CMAS by demographics and leadership characteristics, I conducted multiple regression on three models.

Table 1

Correlation of Covariates and Leadership Index with CMAS

Variable	Pearson Correlation	*B* coefficient	Beta
Free & reduced lunches	.681	-.046	-.062
Number of Students	-.005	.016	.460
Leadership Index	.933	17.153	1.074

Note. Leadership Index is a mean of six leadership characteristics. Data for the Leadership Index were from principal surveys. Data on free/reduced cost lunches and the number of students per respective school were from the Colorado Department of Education website. The CMAS test was for Colorado eighth grade math in 2016.

The results of the multiple linear regression analysis on the first model of percentage of free and reduced lunches revealed no statistical significance ($p > .05$). When I added number of students in the second model, results continued to reveal no significance. In the third model, when I added a leadership index, a statistically significant association was found for the three independent variables. The adjusted *R*-squared value of .837 suggests that the third model explained 83.7% of the variation in CMAS scores, $F(3,7) = 12.94$, $p = .016$. Accounting for the two demographic variables, the regression coefficient [B = 17.2, 95% CI (7.9, 26.4), $p < .05$] associated with the Leadership Index indicated that for every point of increase in the Leadership Index, the CMAS score is increased by approximately 17.2 points. The Leadership Index was developed through the analyses of the hypotheses discussed in this chapter. It was included here to provide a covariate context for the leadership characteristics. The leadership characteristics index was a better predictor of CMAS than the percentage of free and reduced lunches or school size, indicating the high importance of leadership in

education. Since 2010, federal and state governments have placed an emphasis on improving principal effectiveness as a means to improve academic achievement (ED, 2010; Dolan, 2013). It appears the concentration on principals is justified.

To further answer the research question, I analyzed data to evaluate each of the five hypotheses. In what follows, I first discuss the characteristics of the variables that determined which statistical analyses could be used. The focus of this study was on variables that might define transformational leadership. These independent variables were continuous data which facilitated evaluations for correlation. The dependent variable of 2016 CMAS eighth grade math scores was also continuous. Figure 3 and Table 2 show the linearity and normalcy of the dependent variable so that parametric statistical analyses, such as the Pearson correlation and multiple regression were appropriate. A normal distribution is defined as looking the same on both ends (Field, 2013). Although the distribution of the CMAS scores did not have the pronounced bulge in the middle that often signifies a normal distribution, the distribution looked the same on both ends so the distribution met the assumption of normalcy.

The CMAS raw data was reported in three digits, and SurveyMonkey reported means of the principal characteristics carried out to the hundredth, allowing for three digits on the x-axis and three on the y-axis, which made for a nice-looking graph. Two of the principals' self-evaluations were outliers that appeared to be inflated, and one teacher's evaluation was a smaller outlier that appeared to result from an overly harsh assessment. One point was subtracted from each of the two principal evaluations and .25 was added to the one teachers' evaluation. Those adjusted figures were used throughout the study.

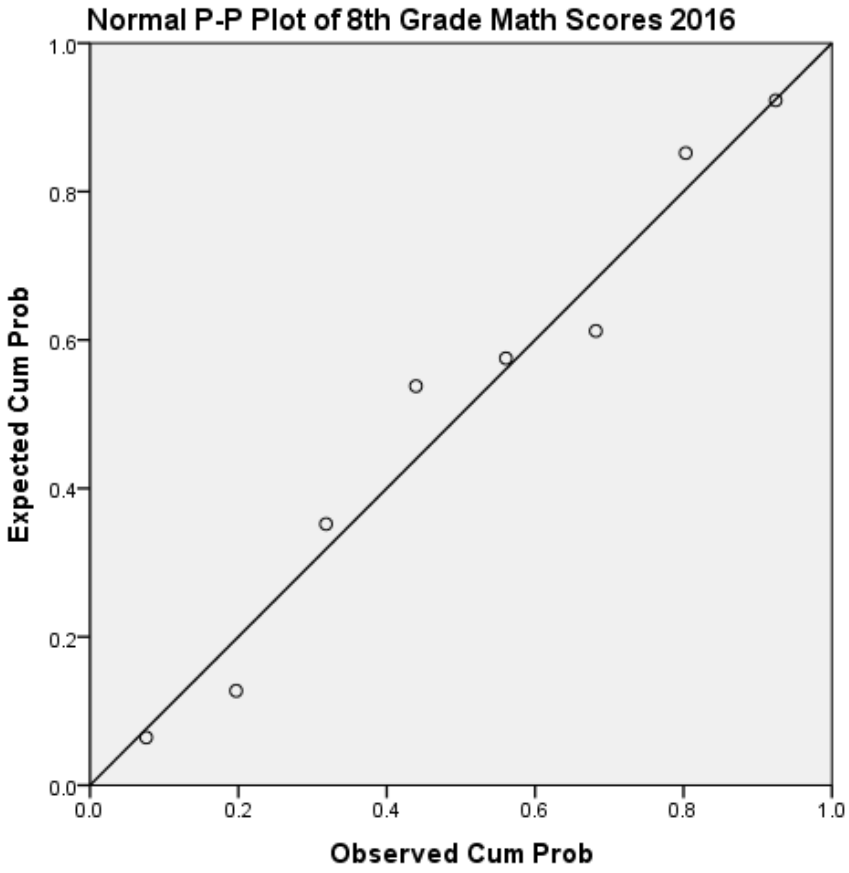

Figure 3. SPSS plot of the dependent variable.

Table 2

Descriptive Statistics of the Dependent Variable

	N	Minimum	Maximum	Mean	Std. Deviation
8th grade math scores 2016	8	704.00	735.00	720.0000	10.52887
Valid *N* (listwise)	8				

Analysis to Evaluate the First Hypothesis

The first hypothesis concerned the relative correlation of high expectations versus other principal leadership characteristics, the null hypothesis stating that high expectations would have the strongest correlation. $H_0$1: High expectations will be more highly correlated with CMAS scores than any other leadership factor including managerial leadership, instructional leadership, transactional leadership, beneficial modeling, inspirational motivation, systems thinking, individualized consideration, and shared leadership. H_A1: At least one other leadership variable including managerial leadership, instructional leadership, transactional leadership, beneficial modeling, inspirational motivation, systems thinking, individualized consideration, and shared leadership will be more highly correlated with CMAS scores than high expectations.

Using SPSS, the significance (*p*) and Pearson correlation statistic (*r*) was calculated for each principal characteristic and the 2016 CMAS math score. Of the nine characteristics, five had higher significance and correlations and three characteristics had lower significance and correlations than high expectations.

Table 3

Correlation of Leadership Characteristics with 2016 Eighth Grade CMAS Math Scores

Principal characteristics	**Pearson correlation**	VIF	Beta
	Transformational		
Beneficial modeling	.792*	6.5	.951*
Individualized consideration	.790*	18.562	
Systems thinking	.775*	19.852	
Inspirational motivation	.711*	3.076	.601*
Shared leadership	.340	3.234	-.424*
	Non-Transformational		
High expectations	.680	50.766	
Transactional leadership	.602	3.278	-.265
Instructional leadership	.483	10.864	
Managerial leadership	.816*	31.693	

*$p < .05$

Having several high correlations was a clue that there was multicollinearity. Evaluating solely on the basis of bivariate differences would be dangerous. Along with multiple regression I used SPSS to test for multicollinearity with the five transformational leadership variables and a second test with the four non-transformational leadership characteristics. The Variance Inflation Factor (VIF) scores for the two tests are reported in Table 3. Since VIF scores greater than ten are considered a cause for concern, I did another multiple regression with the four factors that were less than ten. The four had an Adjusted R Square of .712. The Beta scores for the four are reported in Table 3.

The results of the multiple linear regression analysis revealed a statistically significant association between a model of beneficial modeling and CMAS scores. The regression coefficient [B = 12.4, 95% CI (7, 21.98) p = .019] suggests that with each

additional unit of beneficial modeling CMAS scores are increased by 12.4. The Adjusted R^2 value of .566 suggests that by itself beneficial modeling accounts for 56.6% of the variation in CMAS scores. When inspirational leadership and shared leadership were added to beneficial modeling the Adjusted R^2 for the model was .754 meaning that the three independent variables accounted for 75.4% of the variation in CMAS scores.

Since beneficial modeling by itself can account for over half of the variation in CMAS scores and three variables can account for three-fourths of the variation, high expectations cannot account for the most variation in CMAS scores. The analysis of data from this sample indicates that the first null hypothesis can be rejected and the alternative hypothesis accepted. High expectations did not have the highest significance and correlation with CMAS when undergoing either simple correlation or multiple regression. When analyzing bivariate correlations, high expectations was never higher than third and was often as low as sixth out of nine. In contrast to the high number of statistically significant correlations using bivariate correlation analysis, the multiple regression analyses had few statistically significant results, indicating the collinearity problem. Nevertheless, the results of this analysis indicate that high expectations is not the highest predictor of CMAS variation. However, its exact location in comparison to other variables was not determined. It is probably between the third and the sixth of the nine leadership variables analyzed.

Analysis to Evaluate the Second Hypothesis

The second null hypothesis states that regression will not correlate transformational leadership characteristics as together influencing CMAS scores. The alternative hypothesis states that regression will correlate transformational leadership

characteristics as together influencing CMAS scores. To analyze the second hypothesis I used multiple regression to analyze an index of six likely components of transformational leadership based on analysis of the top leadership correlations reported in Table 3. The results of a regression analysis of the leadership index by itself revealed an R^2 value of .736 suggesting that 73.6% of the variation in CMAS scores. The regression coefficient [B = 13.7, 95% CI (5.5, 21.9) p = .006] suggests that for each additional unit of leadership index increase CMAS scores are increased by 13.7. The Beta was .858 ($p < .01$) indicating a high correlation between the leadership index and CMAS scores. Based on this analysis the null hypothesis is rejected for the second hypothesis. A regression analysis suggests that transformational leadership characteristics do influence CMAS scores.

Analysis to Evaluate the Third Hypothesis

The third null hypothesis stated that high expectations would be highly correlated with CMAS regardless of the relative presence or absence of individualized consideration. The third alternative hypothesis stated that high expectations would be more negatively correlated with CMAS scores when individualized consideration is lowest and more positively correlated with CMAS when individualized consideration was highest. In order to evaluate the third hypothesis, I constructed Table 4 that includes the principals' confidential identification numbers, the raw 2016 CMAS math scores, the principals' high expectations (HE) rating, and the principals' individualized consideration (IC) rating in the IC order.

The two highest CMAS scores were for principals who had the highest expectations, as many would expect. The highest two CMAS scores also were for the

highest IC, which I would expect from the literature review. The next to the lowest CMAS score was for Principal 120 who had the lowest HE and the lowest IC, again as expected. However, the lowest CMAS score was for Principal 132 who had a relatively high HE rating and low IC rating. And Principal 116 had a high CMAS score despite having a relatively low HE rating. She had a high IC rating, so in her case and for Principal 132 individualized consideration was a better predictor of CMAS than high expectations.

Table 4

Comparison of High Expectations and Individualized Consideration

Principal ID#	CMAS	High expectations	Individualized consideration
113	735	6.00	5.25
134	731	5.33	5.20
116	722	4.33	5.20
115	721	5.05	5.00
135	716	4.67	4.40
125	723	4.04	3.85
132	704	4.67	3.80
120	708	3.6	3.66

Note. Adapted from Principal Leadership Questionnaire and Colo. Dept. of Education

The top four IC coincide with the top HE except for one, 116 which has a lower HE. The lower four IC coincide with the lower HE except for 132 which has a higher HE. Therefore, $H_0 3$ can be rejected because in six instances IC predicts HE and in the other two instances IC predicts CMAS better than HE. The data analysis suggests that high

expectations are more negatively correlated with CMAS scores when individualized consideration is lowest and more positively correlated with CMAS when individualized consideration is highest. HE and IC are more correlated in this sample than I expected with $r = .734$ ($p < .05$). The combination of high expectations and low individualized consideration correlates with the lowest CMAS score and reveals a concern about having high expectations without also having high individualized consideration.

Analysis to Evaluate the Fourth Hypothesis

Hypothesis Four had to do with the influence of covariates on the variables, particularly high expectations. *H_04*: As the covariates of student socio-economic status, school size, school location, principal education, principal experience, principal gender, parental involvement, and community involvement are introduced into SPSS calculations, independent variables will no longer continue to be correlated with CMAS, while high expectations will continue to show the highest correlation with CMAS. *H_A4*: As the covariates of student socio-economic status, school size, school location, principal education, principal experience, principal gender, parental involvement, and community involvement are introduced into SPSS calculations, independent variables will continue to show correlation with CMAS scores, with at least one other leadership factor showing a greater correlation than high expectations.

As was reported previously, multiple regression analyses of the continuous covariates showed no significance at the .05 level. As each covariate was run with a set of principal characteristics that included high expectations, no significant differences were found. The null hypothesis can be rejected because there were no significant findings that improved

the correlation of high expectations and CMAS. Even if the statistical significance would be set aside, high expectations never had the highest r, B, or Beta.

As the covariates of socio-economic status, school size, principal experience, parental involvement, and community involvement were introduced into the calculations, results were not significant. The data on the proposed covariates of school location, principal gender, and principal education were not conducive to the variable analysis.

Analysis to Evaluate the Fifth Hypothesis

H_05: The statewide correlations of independent variables and covariates will not help to explain the three-year trends of CMAS scores of 12 randomly selected schools for the study. *H_A5*: The statewide correlations of independent variables and covariates will help to explain the three-year trends of 12 randomly selected schools for the study.

I was unable to evaluate the fifth hypothesis of validating a model because of a lack of enough information due to the small sample size. If 70 middle school principals had participated, then I could have randomly selected the 12 called for in the hypothesis. In the spirit of checking the model, I used the CDE growth statistics of each participating school. From the results in evaluating the first four hypotheses I propose a new model (definition of transformational leadership) based on six characteristics. I took the means of those six characteristics for each principal and ranked them in Table 5. Alongside the model ranking the eight sample schools, I included a column for the 2016 eighth grade math scores and a column for the CDE math growth statistic for each whole school.

Although the ranking of the model and the growth statistic did not precisely match, the highest four on the model corresponded with the schools that had growth scores above 50. Likewise, the four lowest ranked from the model corresponded to the

schools that had growth scores below 50. One school ranked in the top half by the model had a lower raw math score and one in the bottom half of the model had a higher raw math score. That is particularly interesting because the model was developed from the CMAS raw math scores for eighth graders and yet the model broadly better predicted school growth.

Table 5

CMAS Scores and Principals Ranked by Model

Principal ID#	CMAS Raw scores	Model of 6 Characteristics	CDE Math Growth Statistic
			Above 50%
113	735	5.36	51
134	731	4.99	68
115	721	4.72	51.5
116	722	4.67	68
			Below 50%
135	716	4.19	41
125	723	3.93	48
132	704	3.9	46.5
120	708	3.36	40

Note. Source: Principal Leadership Questionnaire and Colo. Dept. of Education

The statistical correlation was higher for the model and CMAS at $r = .858$ ($p = .006$) while the correlation for the model and growth was $r = .640$ ($p = .087$). In this sample, it is suggested that a model index ranking above 4.4 predicts a growth score above 50% and a model index rating below 4.4 predicts a growth score below 50%. Since the model predicted the growth statistic, the analysis is a check on validity that was intended for Hypothesis Five, but does not allow for the acceptance or rejection of the null hypothesis.

Survey Item Correlations with CMAS

When I wrote the proposal I only anticipated that I would be able to evaluate the summative principal characteristics. As I worked with SPSS in analyzing data I realized that I could also analyze each of the 32 items. The most significant of the three items that made up the beneficial modeling characteristic was Survey Item 7: "The principal has provided good models for faculty to follow" ($p = .003$, $r = .887$). Since high expectations is of interest I included that item along with two others, one from the transformational list and one from the non-transformational list. The ANOVA significance for the four-variable multiple regression analysis as a whole was .031. The Adjusted R^2 is surprisingly high for four items at .873 with the Durbin-Watson at 2.047 (The closer to 2 generally the better for the Durbin-Watson). The multicollinearity discussed with summative characteristics could also apply to the individual survey items. Another possibility to consider is that individual survey items could be matched with multiple principal characteristics. For example, in a bivariate regression analysis Survey Item 16: "The principal has provided the necessary resources to support my implementation of the school's program" had an adjusted R^2 of .736, a B coefficient of 7.644, and a Beta of .879 significant at $p < .01$. Item 16 was placed in the category of individualized consideration in this study, but it could also fit under managerial leadership, or inspirational motivation, because motivation is something everyone needs. Providing necessary resources will be discussed more in Chapter 5.

Summary Answers to the Research Question

The research question was to what extent, if any, are there correlations between nine principal leadership variables and results on participating Colorado Measures of

Academic Success 2016 eighth grade math scores. One of the most important results from the evaluation of the hypotheses to answer the general research question was that high expectations were never the dominant factor in significance or correlation with CMAS. Four transformational leadership factors were found to be significant at the .05 level. The proposed inclusion of shared leadership as a transformational leadership characteristic was called into question because of its negative correlation with Bass's four transformational leadership characteristics and its low correlation with CMAS math scores. This will be discussed further in Chapter 5 in pursuit of a definition of effective transformational leadership. managerial leadership items will be included in that discussion because of their high significance and correlation with CMAS.

Chapter 5: Interpretation of the Results

Purpose and Nature of the Study

The purpose of this study was to advance knowledge about what principal leadership behaviors might contribute to student achievement. The ratings of participating middle school principals for leadership behavior were analyzed for correlation with CMAS scores. I conducted the analysis to find the relative correlations of the five possible transformational leadership variables including beneficial modeling, inspirational motivation, systems thinking, individualized consideration, and shared leadership and four non-transformational leadership variables including managerial leadership, instructional leadership, transactional leadership, and high expectations.

Key Findings

Upon correlational analysis, I found that four of the five transformational leadership characteristics correlated with CMAS scores at the .05 level: beneficial modeling, inspirational motivation, systems thinking, and individualized consideration. One of the four non-transformational leadership characteristics, managerial leadership, also correlated with CMAS scores at the .05 level. The one transformational leadership characteristic that I found to be negatively correlated with CMAS scores was shared leadership. The three non-transformational leadership characteristics that I found to be less than significant at the .05 level were instructional leadership, transactional leadership, and high expectations. As I analyzed 32 survey items I concluded that there is a scholarly need to enhance the meaning of transformational leadership.

Interpretation of the Findings

The findings of this study are facilitative of a discussion of the components of transformational leadership. Bass (1998) defined transformational leadership as having four characteristics. The first he called *charismatic leadership* or *idealized influence*. He described this characteristic as leaders behaving as role models. Because I also took into consideration the work of Bandura (1977) who pointed out the effectiveness of modeling on learning, I called this characteristic *beneficial modeling*. Two of Bass's labels that I did not change were *inspirational motivation* and *individualized consideration*. The other characteristic Bass labeled *intellectual stimulation*, which I changed to *systems thinking* in deference to Senge (1994). Jantzi and Leithwood (1996) developed survey items to match Bass's four transformational leadership characteristics. In my relabeling, I did not change Jantzi and Leithwood's survey items for these four characteristics. Each of Bass's characteristics of transformational leadership were individually significant with high correlations to the CMAS data used in this study, as reported in Table 3.

Using multiple regression analyses, I found that the first of Bass's characteristics, modeling, had a significant impact. This is consistent with the research of Valentine and Prater (2011) who found modeling to be the most consistently significant factor in principal leadership that was correlated with Missouri test scores. Bandura (1977) built his cognitive learning theory on the crucial nature of modeling to learning. One of Bandura's examples is physician training for surgery. Surgeons learn to perform surgery by observation and then by imitation. This study reinforces the importance of a principal modeling the behavior that is desired for faculty and students.

The other three of Bass' transformational leadership characteristics appear to have similar and high predictive powers for CMAS scores. If principals have one of these characteristics, they likely have the other two. The study results indicated that inspirational motivation, individualized consideration, and systems thinking overlap in some manner. Perhaps the concept of attunement (Pryce, 2012) that I discussed in Chapter 2 under individualized consideration also has implications for inspirational motivation and systems thinking. When I think of the concept of attunement, I think of Dr. Martin Luther King who was able to put in words what masses of people were thinking. He had to be aware of individual differences as well the American system in order to effectively inspire change. I have known principals who have had great influence in school-centered communities.

Other findings in this study raise the question of whether or not other characteristics should be included in a definition of transformational leadership. In my dissertation proposal, I included shared leadership as a transformational leadership characteristic. However, shared leadership had a negative relationship with CMAS scores (-.424 p = .035), so it might not be a transformational leadership characteristic. Perhaps there is a danger that principals trying to empower teachers by shared leadership may unintentionally appear to establish a false empowerment. Ciulla (2004) said that "bogus empowerment" where employees are given more responsibility without control is stressful. She said that authentic empowerment gives employees control over their work so that they can take responsibility for their effort (Ciulla, 2004). Based on Survey Item 16, perhaps empowerment for a teacher is having what is needed to teach. Part of that may be control of the classroom. An insistence on common goals, procedures, and rules

may interfere with a teacher's ability to maintain classroom control. For example, if a school convention is called to handle the indiscretion of one student, the majority may decide that the solution is a school-wide rule that to some teachers may appear to be foolish and difficult to enforce.

That shared leadership rule then reduces the power that those teachers need to manage their classroom well. Item 30 was the statement "The principal has developed appropriate rules and procedures" ($r = .774$, $p < .05$). Rather than the leadership of a principal being a detriment to teacher empowerment, the wise principal may provide a shield for individual teachers from encroachment by the faculty. That does not mean there is no place for meetings and for principals to listen to faculty. What it may mean is that sharing should be done with the purpose of each teacher being able to adapt general common goals to their individual classrooms. Examples could be given of what may work well for some teachers, rather than have a drive for consensus where every teacher is required to do things the same way.

The only variable from the shared leadership category with a significance greater than .05 was Survey Item 8, at a significance of .046 and a correlation of .715. Item 8 was the statement, "The principal has gone beyond self-interest for the good of the group." Item 7 had a significance of .003 and correlation of .887. Item 7was the statement, "The principal has provided good models for faculty to follow." It is likely that as staff sees the principal go beyond self-interest for the good of the group, they will also be willing to work for the good of staff and students. Perhaps the good of the group is empowering staff members to do their job in a way that makes the best use of their time, talent, and energy.

Besides Item 8 about going beyond self-interest, the positive findings from Items 30 and 31 might be used to form a new definition of empowerment for educators and then add it to an expanded definition of transformational leadership. These items may help to identify a true empowerment where principals sacrifice their power and convenience to enable each teacher to do their best in the classroom. Item 30 was the statement, "The principal has developed appropriate rules and procedures." Although this may be counter-intuitive, appropriate rules may help protect individual teachers from all-encompassing meeting-driven rules that infringe on their ability to control their unique classrooms. Item 31, which had a high correlation with high CMAS scores, was the statement, "The principal has used systematic procedures for staff appraisal." While teacher evaluations inherently display a principal's power, limiting those evaluations to commonly known and universally applied procedures frees teachers to make informed decisions on how best to manage their classrooms to meet school-wide expectations. Earlier in this chapter, I reported the high correlations of Bass's four transformational leadership characteristics with CMAS scores. Here I am suggesting adding a new empowerment characteristic to replace the shared leadership characteristic that was in my original proposal. The empowerment characteristic could be identified using the managerial leadership survey items and the *going beyond self-interest* element of the shared leadership characteristic.

My analysis of the results from Item 16 may be the most important contribution of this study to the field. It had a strong correlation of .879 with $p < .01$. It was the statement, "The principal has provided the necessary resources to support my implementation of the school's program." Ultimately, it is not how high a principal sets expectations, or how much they are perceived to care, but rather, whether or not the

principal can get teachers the resources they need to do their jobs that most influences student achievement. This brings another light to the discussion of management versus leadership. Whether or not management is considered transformational, at least some managerial tasks must be completed well if students and teachers are to thrive. In this study, the category of managerial leadership had a high correlation (.816 at $p < .05$). Findings from Item 16 seem to point to the bottom line of leadership.

If a principal is providing a good model, inspiring positive attitudes, thinking holistically, considering people as individuals, and desiring high achievement, then that principal is going to do what it takes to get teachers what they need to help students learn well. Rather than suggesting that managerial leadership be considered a part of transformational leadership, I would use the word *empowerment* to include some of the managerial items and revised shared leadership items. Based on the results of this study it appears that empowerment likely looks different for teachers than the literature portrays for others outside the education sector. Shared leadership is thought to be the major component of empowerment, so that is why I used the term in the proposal. Six items were included under the category shared leadership, more items than for any other characteristic. Item 9 was the statement, "The principal provided for our participation in the development of school goals." It had a negative correlation of -.176 with $p > .05$). Items 10-12 concerned providing for faculty participation in the development of common goals, school policies, priorities, and evaluation of achievement. They all had low *r* correlations with significances higher than .05. As was reported earlier in Chapter 4 results, the index with theses six characteristics had a high correlation with CMAS math scores and the CDE growth statistic.

Should high expectations be considered a transformational leadership characteristic? Jantzi and Leithwood (1996) included high expectations as a transformational leadership characteristic, and I used their respective items in my survey. The reason I did not include high expectations as a transformational leadership characteristic in this study was because I wanted to more thoroughly test its individual significance in improving education. This study disconfirms the popular notion that the most important thing a principal can do is raise expectations in order to raise CMAS scores. Bass's (1998) four characteristics all had higher correlations with CMAS scores. In the evaluation of Hypothesis 3, I found that when individualized consideration and high expectations are both rated highly for a principal, that school was likely to score highly on CMAS. My findings indicated that when other helpful characteristics are present, high expectations likely contribute to higher CMAS. Therefore, after further analysis, I included high expectations as a transformational leadership characteristic.

The other two leadership variables should be at least briefly discussed. Since I was immersed in what Clawson (2012) labeled Skinnerian behaviorism (transactional leadership) in my teacher preparation at Colorado State University in the early 1970s, it is a little strange to only give it a glance here. However, this is a "good strange" because this study indicates that contingent reward is not enough to produce excellence for all students. Transactional leadership was not included in the surveys used by Leithwood, Prater, or Klinginsmith. I probably added it due to my training and because it was identified as a contrast to transforming leadership by Burns (1978). Based on his review of well-known historical leaders, Burns developed his theory of transforming leadership as being superior to transactional leadership. This study helps to confirm Burns'

observations since transactional leadership had the third from the lowest significance and correlation. Burns did not say that transactional leadership was not ever useful, but rather it is best used in the context of transforming leadership. What Burns and Clawson (2012) challenge is that behaviorism is all-encompassing. This study is confirming to Burns and to Clawson.

The last of the nine leadership characteristics to be discussed is academic leadership. On the face of it, it makes no sense that academic leadership would be one of the least significant predictors of high scores on CMAS. Perhaps because state licensure requires a considerable amount of academic preparation, educators have similar academic attributes that are not differentiating in effect on academic achievement. Our educator preparation and licensing appears to be based on the concept that the person who has the most knowledge is likely to pass on the most knowledge. This concept ignores the observation of Dewey (2010b) that teaching involves moving in harmony with the minds of others, entering into their problems, and sharing their intellectual victories. Of course, knowledge of subject matter is important, but knowledge does not get into the learner without a connection. The principal who can inspire teachers to stay engaged with their students will help them to be academically successful. As Bandura (1977) said, successful learning gives students confidence to learn more and so there is an upward spiral of learning.

There is also a downward spiral of unlearning. This study found support for probable reasons for this. One reason is the push for high expectations without providing the resources to meet those expectations. Secondly, the present vogue of shared leadership is likely sometimes resulting in a false school-wide empowerment that detracts

from true classroom empowerment. Transformational principals not only supply their teachers with the physical tools they need, they provide their teachers and students with a liberating intellectual environment that facilitates academic achievement. Thirdly, academic achievement is not just about acquiring knowledge, it is about stimulating the heart and intellect to connect with others to analyze, synthesize, and plan a better future.

Limitations of the Study

The biggest limitation to generalizability, trustworthiness, validity, and reliability is the relatively small size of the sample. However, given the size of the sample (n = 8), it was remarkably representative of the population of Colorado regular public middle school principals (N = 175+). The representative nature of the sample is a reason to take the results seriously, yet the small sample is a reason to not regard the results as foundational. Considering the theory and results of other research from Chapter 2, the results appear to be a step in the journey of understanding more about what transformational leadership looks like for educators, particularly what principal behaviors may facilitate higher student achievement that results in higher scores on Colorado's standardized testing, as well as some behaviors to avoid.

Recommendations

With support from state leaders that might help gain a larger sample, I would like to do a similar study that actually had a large sample. I would begin with a model that includes the most significant items from this study. I hope researchers will do similar studies with elementary and high school principals and in other states. All of the middle schools in the study were regular public middle schools. It would be good to include parochial, private, home, and charter schools in a larger study. This is especially relevant

in a new administration where school choice is the mantra. Secretary of Education Betsy Devos has championed the ability of parents to choose the best schools in every zip code (Congressional Documents, 2017). An ancillary cause would be to learn what we can to make every alternative better.

Implications

Even without the pressure of legislated academic achievement standards, it is important to provide the best educational environment for all youth. The cost to lives filled with failure and disappointment can include illegal activities, physical health problems, mental health problems, and becoming parents of children who are more likely to drop out. An increase in educational attainment can lead to higher earnings, decrease in the costs of criminal activity and social welfare dependency, as well as an increase in service to the community. Bandura (2007) found that success in one area, in this case education, leads to self-efficacy and success in other areas such as employment. Transformational leadership factors appear to have the potential of helping our children to achieve more academically which will lead to more opportunities for them. As children enter the adult world, they can be better prepared to make significant contributions to positive social change.

This correlational study will help fill a gap in the literature by extending research on the possible benefit of principals' use of transformational leadership factors as they relate to achievement on statewide standardized test scores by students. Knowledge from this study could help principals to use more effective practices in developing more successful schools. Even if the results were only valid for eight Colorado middle schools,

a substantial population is involved. The consistency of results with theorist/researchers like Bass and Bandura adds to the safety of generalizing the results further.

If transformational leadership characteristics continue to be found to contribute to the productivity of followers, then there are also implications for legislators. It is important not to convey an adversarial and imposing attitude toward educators if the hope is to give them incentive to help students.

There is a human response to want to reject the whole high stakes testing/common core standards/imposing evaluation system. In order to make the necessary standards palatable, educational leaders must make an extra effort to overcome their innate dehumanization. This study shows that the combination of transformational leadership and measured standards can lead to productivity.

Conclusion

My study of literature on school-based mentoring began as President Obama and Colorado governors were promoting a Race to the Top where U.S. students would reclaim their position as the best test takers in the world. The early results of the political effort did not appear to be fruitful. From 2008-2013, eighth grade Colorado standardized test scores were flat. The proposed climb to the top of a mountain only resulted in a jaunt on the plateau. Several studies from 1995-2005 had shown school-based mentoring to be mildly beneficial and so funding for youth mentoring had been increased as a part of the No Child Left Behind legislation. In 2009. the U.S. Department of Education contracted for a study of federally funded youth mentoring programs.

The study found no statistically significant impacts on youth in those programs and federal funding of youth mentoring programs came to an end in the FY 2010 budget.

Since I believed that some of the mentoring programs were beneficial, I came to the conclusion that there must be some programs that were detrimental. I suspected that the same was true of education in general. The comparison of statistical means sometimes hides the fact that some factors in education were facilitating academic achievement while other factors, or lack of factors, facilitated a relative decline in academic achievement.

For more than a decade some researchers have been warning people that there existed a risk, as well as a reward, to youth mentoring (Rhodes, 2002). Youth were helped by mentors who connected with youth in long-term, mutually respectful relationships. Students became despondent as adults created high expectations and then did not commit their resources to meeting those expectations. One of the first dissertations I read was by Carter (2008). She had put together a school-based mentoring program similar to one I had contemplated. In her pre-test post-test analysis, the mean showed that there was no significant progress for mentees in her program. However, some students had improved from pre-test to post-test and some had declined from pre-test to post-test.

An explanation of why at least one regressed can be found in a student who declined by 23 points and reported that her mentor tried to make her do a lot of work that she could not do. This may be a specific example of my general findings that resources are needed for high expectations to have a positive effect and that if those resources are not available then high expectations can actually be detrimental. Carter's (2008) declining student corresponds to this study's lowest scoring school, 17 points below the state average. The principal in that school had a high expectation rating and a low

individualized consideration rating. This appears to be a combination to avoid in order to improve individual student achievement and school test scores.

The highest CMAS score was 14 points above the state average and that principal had both the highest expectation rating and individualized consideration rating. The principal who had the lowest expectations rating had the second lowest CMAS score. Low expectations can be a limitation to achievement and high expectations can either accompany high achievement or low achievement. Tsiplakides and Keramida (2010) found that sometimes high expectations lead to student achievement and sometimes not. The answer to the question of when it does and when it does not is found in Item 16 of this study. Student achievement as demonstrated by CMAS correlates with principals who provide the necessary resources to their teachers and students. One of those necessary resources is the principal being a good model for teachers and students.

In my years of teaching I helped students learn more when resources were available to me than when I had to come up with my own. In my teaching experience, I also found that Bandura (1977) was right that academic success instills a confidence that leads to an upward spiral of academic achievement for the student. In dealing with troubled students of high and low capacities to learn, I was committed to getting them started achieving by any motivation I could come up with including contingent reward because I knew that once they received a taste of success they would motivate themselves with resulting success on tests.

I learned more in a few minutes of observing how a principal interacted with an early class than I did from months of teacher training. He modeled a confidence, clarity,

and an assumption that students would do what he asked. I found that to be a much better model than trying to set up consequences for each misstep.

Student achievement is not static. It is increasing or decreasing at various rates. Based on the Chapter 2 literature and this study, one of the probable reasons for lower achievement rates is the push for high expectations without providing the resources to meet those expectations. Secondly, some attempts at shared leadership do not appear to translate into achievement. Rather, they lead to a false school-wide empowerment that detracts from empowering teachers in their classrooms. Effective principals not only supply their teachers with the physical tools and environment they need; they also provide their teachers and students with transformational leadership. The large number of significant items from this study could help in the understanding of what transformational leadership looks like in at least some Colorado middle schools.

One implication for public policy at the Colorado state level is that legislators make adequate resources available to superintendents and principals that they can properly channel to teachers so they can appropriately motivate students to increase their learning. A second implication is that legislators work with educators to understand what is truly needed. Items from this study could help legislators understand what Colorado middle school principals need in order to set the table for greater achievement in our schools.

As I collected data for this study, the new Trump administration had begun with a mantra for school choice. Do the results of this study have any implications for school choice? I do not foresee any of the choices going away. Each of the choices has a leadership structure. In parochial, private, and charter schools the structure is usually

similar to public schools with someone responsible for what goes on within a particular school building. To the extent that schools are similar to those in this study sample, the same type of leadership characteristics are likely to be similar in effectiveness. Home schooling provides unique opportunities and obligations. Both in the literature review and in my study results, modeling has been found to be correlated with student achievement. Parents have a great opportunity to demonstrate the type of behaviors they want to see. Parents have the obligation to provide their students with what they need to meet high expectations. In my school district the same student can take a literature class at home, a geometry class at a charter school, a physics class at the regular high school, a music class at a private school and a technology class at the community college concurrently. I have high expectations that this cooperative approach to meeting individual student goals will be successful in producing higher test scores among other achievements so long as there is the leadership to make all these choices feasible.

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Appendix A: Principal Leadership Questionnaire

By filling out this form you are agreeing for the information to be used in a research project. The individuals who respond to the survey will be anonymous. The results will only be known by the school.

Please use the following key to indicate the degree to which each statement applies to your principal. Respond specifically about your principal, not an assistant principal or other school leader. The typical time to complete this survey is 15-20 minutes.

1=Strongly Disagree 2=Disagree 3=Somewhat Disagree 4=Somewhat Agree 5=Agree 6=Strongly Agree (circle, check, or darken the number that applies)

The principal has:

1.	Commanded respect from everyone on the faculty.	1 2 3 4 5 6
2.	Excited faculty with visions of what we may be able to accomplish if we work together as a team.	1 2 3 4 5 6
3.	Made faculty members feel and act like leaders.	1 2 3 4 5 6
4.	Given the faculty a sense of overall purpose for its leadership role.	1 2 3 4 5 6
5.	Led by "doing" rather than simply by "telling".	1 2 3 4 5 6
6.	Symbolized success within the profession of education.	1 2 3 4 5 6
7.	Provided good models for faculty to follow.	1 2 3 4 5 6
8.	Gone beyond self-interest for the good of the group.	1 2 3 4 5 6
9.	Provided for our participation in the development of school goals.	1 2 3 4 5 6
10.	Encouraged faculty members to work toward the same goals.	1 2 3 4 5 6
11.	Used problem solving with the faculty to generate school policies.	1 2 3 4 5 6
12.	Worked toward whole faculty consensus in establishing priorities.	1 2 3 4 5 6
13.	Regularly encouraged faculty members to evaluate our progress toward achievement of school goals.	1 2 3 4 5 6
14.	Provided for extended training to develop my knowledge and skills relevant to being a member of the school faculty.	1 2 3 4 5 6

15. Personally helped me to develop my strengths.	1 2 3 4 5 6
16. Provided the necessary resources to support my implementation of the school's program.	1 2 3 4 5 6
17. Treated me as an individual with unique needs and expertise.	1 2 3 4 5 6
18. Taken my opinion into consideration when initiating actions that affect my work.	1 2 3 4 5 6
19. Stimulated me to think about what I am doing for students.	1 2 3 4 5 6
20. Helped me to see the big picture.	1 2 3 4 5 6
21. Challenged me to reexamine some basic assumptions I have about my work in the school.	1 2 3 4 5 6
22. Provided information that helps me think of ways to implement the school's program.	1 2 3 4 5 6
23. Insisted on only the best performance from the school's faculty.	1 2 3 4 5 6
24. Shown us that there are high expectations for the school's faculty as professionals.	1 2 3 4 5 6
25. Not settled for second best in the performance of our work as the school's faculty.	1 2 3 4 5 6
26. Has knowledge of the general goals of all the curricular areas.	1 2 3 4 5 6
27. Has instructional observation skills that provide the basis for accurate assessment of the teaching process in the classroom.	1 2 3 4 5 6
28. Able to provide suggestions for improvement when criticizing poor practices.	1 2 3 4 5 6
29. Able to organize activities, tasks, and people.	1 2 3 4 5 6
30. Developed appropriate rules and procedures.	1 2 3 4 5 6
31. Used systematic procedures for staff appraisal.	1 2 3 4 5 6
32. Provided others with assistance in exchange for their efforts.	1 2 3 4 5 6
33. Offered incentives for meeting objectives.	1 2 3 4 5 6

34. Praised people for exhibiting desired behavior. 1 2 3 4 5 6

Appendix B: Permission Letters

May 15, 2015

Kenneth Leithwood, Ph.D.
Ontario Institute for Studies in Education
University of Toronto
252 Bloor St. West
Toronto, Ontario M5S 1V6

Dr. Leithwood,

About a year and a half ago I sent you an email asking for permission to use the Principal Leadership Questionnaire developed by you and Dr. Jantzi in my doctoral dissertation research project. You graciously answered by email with a favorable response. I am most grateful for that because your questionnaire is at the heart of my research project. I intend to do something in Colorado very similar to what Dr. Valentine and his students Prater and Klinginsmith did in Missouri. I would be happy to send you my proposal by email if you would like.

I appreciate the great work that you have done in furthering our understanding of educational leadership and school improvement policy. I referenced seven of your articles in my proposal. I would like to add a copy of your letter to an appendix of my dissertation.

Would you please send me a letter giving me permission to use your Principal Leadership Questionnaire in my Ph.D. research project? It is titled *A correlational study of leadership characteristics of Colorado middle school principals and scores on Colorado's standardized tests.* I will ask principals for a list of their teachers and I will send the questionnaire randomly to some of the teachers, probably via Survey Monkey.

Thank you,

Wayne Wolf
16841 Rimrock Road
Cedaredge, CO 81413

970-856-3272

waynecolo@gmail.com

August 29, 2015

To: Wayne Wolf

From: Ken Leithwood

Re: Use of Principal Leadership Questionnaire

In response to your letter of May 15 requesting permission to use this questionnaire for your own research, you are welcome to do so.

Sincerely,

K. Leithwood

Kenneth Leithwood

P.S. You letter requesting permission arrived by mail today.

Gmail by Google

Wayne Wolf <waynecolo@gmail.com>

I think this is what you will need to print and use in your study

1 message

Valentine, Jerry W. (Emeritus) <ValentineJ@missouri.edu> Sat, May 30, 2015 at 4:30 PM
To: "waynecolo@gmail.com" <waynecolo@gmail.com>

Mr. Wayne Wolf

16841 Rimrock Road

Cedaredge, CO 814813

Mr. Wolf:

I am writing to provide you with permission to reproduce and use as needed the Audit of Principal Effectiveness for your dissertation research project through Walden University.

I wish you the best of luck with your study and I look forward to reading your completed study.

Sincerely,

Jerry W. Valentine

Professor Emeritus

University of Missouri

Columbia, Missouri 65203

Appendix C: Letter to Superintendents and Letter of Cooperation

Permission from School District Superintendents for Principals and Teachers to Voluntarily Respond to A Survey

Dear Superintendent Jones:

The popular answer to the question of how to improve education is to raise expectations. Research shows that it is more complex than that. I am working on a doctoral research project to help analyze the various strengths of correlation between educational practices and scores on Colorado's statewide standardized testing. A goal in gathering this information is to assist in convincing legislators of the importance of listening to educators as they make direct educational policy. Part of the study involves a 15 minute questionnaire to be completed by teachers to anonymously respond through Survey Monkey. I will also send the attached survey for middle school principals to fill out.

Thank you for your valuable contribution to Colorado learners. I intend to work hard to make the time your educators spend on these surveys very much worth their effort.

If you have any questions please call me at xxx or contact me through email at xxx.

Sincerely,

Wayne Wolf, Ph.D. candidate and long-time Colorado educator

Sample Letter of Cooperation from a School District Superintendent

School District #1
Broncoland, Colorado

Date

Dear Wayne Wolf,

Based on my review of your research proposal, I give permission for you to conduct the study entitled A Correlational Study of Transformational Leadership Characteristics of Colorado Middle School Principals and scores on Colorado's Standardized Tests in School District #1. As part of this study, I authorize you to send a survey to our middle school principals and to allow principals to give their teachers an opportunity to complete an anonymous Survey Monkey questionnaire. Individuals' participation will be voluntary and at their own discretion.

We understand that it is our organization's responsibility to inform the principals that they will be receiving the survey. We reserve the right to withdraw from the study at any time if our circumstances change.

I confirm that I am authorized to approve research in this setting and that this plan complies with the organization's policies.

I understand that the data collected from our principals will be kept confidential and data collected from teachers will remain entirely anonymous and may not be provided to anyone outside of the researchers supervising faculty/staff. I understand that I will receive a copy of the published results of the study.

Sincerely,

Authorization Official
Contact Information

Walden University policy on electronic signatures: An electronic signature is just as valid as a written signature as long as both parties have agreed to conduct the transaction electronically. Electronic signatures are regulated by the Uniform Electronic Transactions Act. Electronic signatures are only valid when the signer is either (a) the sender of the email, or (b) copied on the email containing the signed document. Legally an "electronic signature" can be the person's typed name, their email address, or any other identifying marker. Walden University staff verify any electronic signatures that do not originate from a password-protected source (i.e., an email address officially on file with Walden).

Appendix D: Principal Demographic Survey

Dear Principal Smith:

I am gathering information to assist in convincing legislators of the importance of listening to principals as they make direct educational policy. Part of the study involves a survey to be completed by teachers to anonymously identify principal behaviors that are correlated with higher scores on Colorado statewide standards-based testing. The following demographic information will help in performing a thorough analysis of the data. Please return the enclosed survey.

Please circle the highest degree earned: Bachelor's Masters Doctorate

How many years have you held your present position? _____

How many years do you have serving as a principal? _____

What percentage of parents of your students would you estimate are highly involved in and supportive of their children's education? _____

Approximately, what percentage of your students are involved in community activities such as Boys and Girls Clubs, 4-H, or after school programs? _____

What would you like state legislators to know about how student achievement could be improved?

Please provide the following link to your teachers in order for them to have an opportunity to fill out a Survey Monkey questionnaire that should only take 15 minutes. I will not know the names of the teachers—only their school. I will keep your name confidential and not publish individual school CMAS scores even though that information is public and available for me to use in my data analysis. If you send me your completed survey, I will send you the general results of my research when it is complete. These surveys should contribute to greater public understanding of the educational process.

Wayne Wolf, Ph.D. candidate and long-time educator