A CORRELATIONAL STUDY EXAMINING THE INSTITUTIONAL AND FACULTY CHARACTERISTICS OF ACSI SCHOOLS THAT PRODUCED NATIONAL MERIT SCHOLARSHIP SEMIFINALISTS IN 2010

by

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ABSTRACT

Christopher Adam Clagg. A CORRELATIONAL STUDY EXAMINING THE INSTITUTIONAL AND FACULTY CHARACTERISTICS OF ACSI SCHOOLS THAT PRODUCED NATIONAL MERIT SCHOLARSHIP SEMIFINALISTS IN 2010. (Under the direction of Dr. Constance Pearson) Liberty University School of Education, August, 2011.

This is a correlational study examining the characteristics of Association of Christian Schools International (ACSI) schools that produced National Merit Scholarship semifinalists in 2010. The variables examined came from an archival data set: the 2009-2010 ACSI Annual School Survey results. The research questions examine the relationship of institutional and faculty characteristics of these schools. The theoretical basis for the study is the connection between school climate and student academic achievement. National Merit Scholarship semifinalists are chosen based on their scores on the Preliminary SAT/National Merit Scholarship Qualifying Test (PSAT/NMSQT). In 2010, 126 ACSI schools produced National Merit Scholarship semifinalists because of their 11th grade scores on the PSAT/NMSOT. Sixtynine of these 126 schools participated in the 2009-2010 ACSI Annual School Survey, along with 1,884 other ACSI member schools. The sample came from this data set. The results showed six institutional variables that were related to the school producing a National Merit Scholarship semifinalist: accreditation, school size, high school tuition, student computer availability, annual school budget, and years of operation. Five faculty variables were related to a school producing a National Merit Scholarship semifinalist: teachers having graduate degrees, teacher salary, offering of merit pay, student-to-teacher ratio, and number of full-time faculty.

Descriptors: Christian school, student achievement, National Merit Scholarship, school climate

Dedication

This dissertation is dedicated to my wonderful wife, Jennifer. This doctoral program has been a part of our life throughout some important milestones. I was accepted into the program during our six month of marriage. You were dealing with morning sickness during my second week-long intensive and my third intensive was just weeks before our sweet baby girl, Lilly, was born. The oral defense was scheduled two days after Lilly's second birthday. Thank you for all of your encouragement, love, and prayers.

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CHAPTER ONE: INTRODUCTION

Background

Private education has a rich heritage in the United States. The first European Americans only offered homeschooling and private schooling. (Bailey & Cooper, 2009; Kauchak & Eggen, 2005; Plueddemann & LeBar, 1989; Ryan & Cooper, 2004).

Currently, there are five million students in private schools, kindergarten through grade 12 (Broughman, Swaim, & Hryczaniuk, 2011; Plueddemann & LeBar, 1989). Private education is not only for the elite few; many students are now enrolled in private schools. In the U.S., private schools account for 24% of all schools, 11% of all students, and 12% of all full-time teachers (Broughman, 2009).

There are many reasons why parents and communities choose private education.

According to *School Choice for Parents* (2009),

Most private or nonpublic schools in the U.S. are religious, and many are affiliated with a religious faith, denomination, or local church. Many nonpublic schools without a religious identity or affiliation are private schools designed to prepare students for college. Other independent schools are based on a particular educational philosophy or approach to learning, such as Montessori or Waldorf schools; have a special needs focus, such as schools for students who are deaf or blind; or have a specific subject matter specialty, such as science and technology or the arts. (para. 7).

Despite the fact that many parents choose to send their children to private schools, and the number of student who attend are numerous, independent Christian day school

leaders still find themselves defending their legitimacy (Carper & Layman, 2002).

Private Christian school educators are faced with the daunting task of competing with public schools on the basis of academics, arts, technology, athletics and more, while also fulfilling the faith-focused mission of the school and pleasing the tuition-paying parents (Reeves, 2006). Public schools are able (and required) to quantify student achievement (Armstrong, 2006; Bailey & Cooper, 2009; Barker, 2007; Burdman, 2005; Dettmers, Trautwein, & Ludtke, 2009; Gimbert, Cristol, & Sene, 2007; Jeynes, 2009; Reeves, 2004, 2006; Schildkamp, Visscher, & Luyten, 2009; Schmoker, 1999; Wohlstetter, Datnow, & Park, 2008). Hall (2006-2007) states, "Christian schools, like their public counterparts, are expected to prove that they are effective" (p. 6). The challenge of measuring Christian schools' effectiveness in terms of academic achievement can be attributed to the fact that no uniform measure of achievement is implemented by all Christian schools, as it is in public institutions.

The review of literature has revealed a gap in uniform assessment in Christian schooling. Most published scores are based on in-school assessments that may be affected by extraneous variables such as grade inflation and curriculum differences (Franz, 2010). This is true when comparing private schools with public schools or private schools with other private schools (ACT Inc., 2009; Armstrong, 2006; Bailey & Cooper, 2009; Cheng & Mok, 2008; Jeynes, 2007; Kauchak & Eggen, 2005; R. J. Kellough & Kellough, 2003; Opdenakker & Van Damme, 2006; Turley, 2009). In order to make valid comparisons between private and public school students, a commonly-used, standardized assessment must be utilized.

Christian schools, in most states, do not administer state achievement tests.

Achievement assessments that are taken by most secondary Christian and many public school students include the Preliminary Scholastic Aptitude Test/National Merit

Scholarship Qualifying Test (PSAT/NMSQT), Scholastic Aptitude Test (SAT), and the American College Testing (ACT). Public school students are given a code that links their test results to their district, but private school associations do not have such codes. The Association of Christian Schools International (ACSI) has, however, a record of the students who scored high enough on the PSAT/NMSQT to qualify to be National Merit Scholarship semifinalists. The schools that produced these students are the target of this research. Since the PSAT/NMSQT is a nation-wide test taken by public, private, and homeschool students, and the scores have been found to be predictive of AP Exam performance, success on the SAT, and college readiness, it is a useful instrument to determine student achievement and school success (Proctor, Wyatt, & Wiley, 2010; The College Board, 2011).

Each year, 1.5 million public, private, and homeschooled 11th grade students enter the National Merit Scholarship qualifying program by taking the PSAT/NMSQT. Of that number, only 16,000 are chosen to be semifinalists. (National Merit Scholarship Corporation, 2009a). In 2010, 177 students who attend ACSI member schools were designated National Merit Scholarship semifinalists. A focus of this research is to determine the institutional and faculty characteristics that these schools have in common that are related to them producing National Merit Scholars.

Problem Statement

Are there school factors that are related to a Christian school producing a National Merit Scholar? Education literature, including the journals specifically written for Christian educators, reveals many opinions on the topic of what causes high achievement in students (Bailey & Cooper, 2009; Guldemond & Bosker, 2009; Jeynes, 2000; Jeynes, 2003; Jeynes, 2009; Louis, Dretzke, & Wahlstrom, 2010; Popham, 1999; Price, 2008; Reeves, 2004; Reeves, 2006; Schmoker, 1999; Van der Walt & Zecha, 2004; von Hippel, 2009; Werts & Watley, 1970). There are over 3,500 ACSI member schools in the United States, but related literature does not agree on a unifying factor that produces high achievement (Broughman et al., 2011). There are multiple arguments in literature, multiple theories, and multiple practices, but no commonly agreed upon denominator that breeds excellence. This is the problem.

For the purposes of this research, school excellence was defined as an ACSI school that produced a National Merit Scholarship semifinalist in 2010. Whether or not a school produced a National Merit Scholarship semifinalist in 2010 was the dichotomous variable of interest used to research the results of the 2009-2010 ACSI Annual School Survey. This variable effectively divided the sample into two groups: schools that produced National Merit Scholarship semifinalists and schools that did not. This correlational research project used archival data from ACSI to examine relationships between institutional and faculty variables of schools found in the 2009-2010 ACSI Annual School Survey and the variable of interest (Did the school produce a National Merit Scholarship semifinalist in 2010?). It is based on the Theory of the Connection of School Climate and student achievement (Freiberg, 1998; Loukas & Robinson, 2004; MacNeil, Prater, & Busch, 2009; Schoen & Teddlie, 2008; van Houtte, 2005). The

selected institutional variables of focus are accreditation, enrollment size, tuition amount, student computer availability, annual budget, number of ESL students, and years of operation. The selected faculty variables are level of teacher education, amount of teacher salary, offering of merit pay, student to teacher ratio, and the number of full-time faculty. These institutional and faculty characteristics are the independent variables that were used in this correlational study.

Correlational statistical analyses were conducted on the institutional and faculty variables to test if they are related to the production of National Merit Scholars. Separate correlational tests were completed on each variable because some of the variables were related, such as enrollment size, annual budget, and number of full-time faculty. A logistic regression of all variables was performed to discern if any combination of variables can predict that a school will produce a scholar.

Purpose Statement

The purpose of this study was to uncover any institutional and faculty characteristics of Christian schools that produce scholars. Literature has proposed many hypotheses and theories regarding practices that Christian schools can implement that will improve levels of excellence (ACT Inc., 2009; Bailey & Cooper, 2009; Berger, 2003; Darling-Hammond, 2003; Eggers, Calegari, & Moulthrop, 2005; Hall, 2006-2007; Hodgkinson, 2003; Hoover, 2005; Marzano, 2003; Oster, 2007; Owens & Valensky, 2007; Stronge, 2002). Many of the institutional and faculty characteristics proposed in the literature were also variables on the 2009-2010 ACSI Annual School Survey

The PSAT/NMSQT was deemed a reliable instrument to assess student academic achievement because it measures critical reading skills, math problem-solving skills, and

writing skills (The College Board, 2010b). Unlike many classroom-based assessments, the test does not require the student to recall specific facts from classes and eliminates the problem of grade inflation when assessing school academic excellence (Godfrey, 2011). The 2006 study by Milewski & Sawtell reports that PSAT/NMSQT scores are indicators of academic achievement (Milewski & Sawtell, 2006). It has also been found predictive of AP Exam performance (The College Board, 2011). The /NMSQT has also been found to be an indicator of success on the SAT and college readiness (Proctor et al., 2010). The integrity and wide use of this test makes it an effective assessment of student academic achievement when comparing 11th graders at public, private, and homeschools.

In 2010, 126 ACSI member schools produced 177 National Merit semifinalists (with three of these schools producing four or more students). The results of the 2009-2010 ACSI Annual School Survey were used as an archival data set to test selected variables using the hundreds of respondents as the sample. All ACSI high schools were the population. The sample was taken from the 1,917 ACSI schools that participated in the 2010 ACSI Annual Survey. The dependent variable in the study was the answer to the question: Did the school produce at least one National Merit Scholarship semifinalist in 2010? This yes or no question creates the dichotomous dependent variable that was used to test hypotheses using correlational statistical analyses.

Significance of the Study

This study added to the knowledge base concerning institutional and faculty characteristics of schools that produce National Merit Scholars by attempting to identify the related characteristics of schools that produce them. The findings are important to Christian high schools, Christian school associations, Christian school boards, Christian

school principals, Christian school teachers, parents of Christian school students, and Christian school students themselves. If the results reveal characteristics that are related to, and possibly predict, that a school will produce a National Merit Scholarship, then this project will have been significant to Christian school constituents, particularly to ACSI schools. This study added to the literature by using quantitative research to examine the correlation between institutional and faculty variables and National Merit Scholars in a large sample of private Christian schools (Damazio, 1988; "Did you know?," 1999; Finn, Swezey, & Warren, 2010; House, 1999; Jeynes, 2009; Mawdsley, 2006; Oster, 2007; Reeves, 2006; United States Department of Education, 2009; Van der Walt & Zecha, 2004; Werts & Watley, 1970).

Research Questions and Related Null Hypotheses

Three research questions were developed based on current literature on Christian school climate and student success. They were designed to be answered by testing the related hypotheses and analyzing the results of the 2009-2010 ACSI Annual School Survey.

Research Question 1: What institutional characteristics of the school, if any, were related to it producing at least one National Merit Scholarship semifinalist in 2010?

Research Question 2: What faculty characteristics of the school, if any, were related to it producing at least one National Merit Scholarship semifinalist in 2010?

Research Question 3: What combination of institutional and faculty characteristics, if any, predicted the school would produce a National Merit Scholarship semifinalist in 2010?

Research Questions 1 and 2 looked for a relationship between individual characteristics of the school and the variable of interest (whether or not the school produced a National Merit Scholarship semifinalist).

Research Question 3 is different from Research Question 1 and Research Question 2 because of two important words: *combination* and *predict*. The first two research questions examine the correlation of each variable with the variable of interest. The third research question examines the combination of multiple variables that may predict that a school will produce a National Merit Scholarship semifinalist.

The hypotheses were generated to specifically address the research questions stated above. To answer Research Question 1, hypotheses were generated that tested the following institutional variables from the 2009-2010 ACSI Annual School Survey that were related to the scope of this study: accreditation, enrollment size, amount of high school tuition, student computer availability, amount of annual budget, number of ESL students, and years of operation. To answer Research Question 2, hypotheses were generated that tested the following faculty variables from the 2009-2010 ACSI Annual School Survey that were related to the scope of this study: level of teacher education, amount of teacher salary, offering of merit pay, student to teacher ratio, and number of full-time faculty. To answer Research Question 3, a hypothesis was generated to test if a combination of any of the selected institutional and faculty variables listed in the first two research questions predicted that a school was likely to produce a scholar. Each hypothesis is related to a data element from the 2009-2010 ACSI Annual School Survey. Fraenkel & Wallen (2000) note three advantages of stating the hypotheses in addition to research questions:

- 1. A hypothesis focuses on the specific possible outcomes.
- 2. Testing a hypothesis is proper scientific practice.
- 3. The hypothesis helps answer the question if the researcher is actually investigating a relationship.

Research Hypotheses

The hypotheses related to research question 1 are:

H₁: The accreditation of the school is related to the school producing a National Merit Scholarship semifinalist.

H₂: The enrollment size of the school is related to the school producing a National Merit Scholarship semifinalist.

H₃: High school tuition is related to the school producing a National Merit Scholarship semifinalist.

H₄: The number of school computers available to the students is related to the school producing a National Merit Scholarship semifinalist.

H₅: The annual school budget is related to a school producing a National Merit Scholarship semifinalist.

H₆: The percent of students for whom English is not their first language is related to a school producing a National Merit Scholarship semifinalist.

H₇: The number of years a school has been in operation is related to a school producing a National Merit Scholarship semifinalist.

The hypotheses related to Research Question 2 are:

H₈: The percent of teachers with graduate degrees in a school is related a school producing a National Merit Scholarship semifinalist.

H₉: The average teacher salary in a school is related to a school producing a National Merit Scholarship semifinalist.

H₁₀: The offering of merit pay for teachers in a school is related to a school producing a National Merit Scholarship semifinalist.

 H_{11} : The student to teacher ratio of the school is related to the school producing a National Merit Scholarship semifinalist.

 H_{12} : The number of full time faculty in a school is related to a school producing a National Merit Scholarship semifinalist.

The hypothesis related to Research Question 3 is:

H₁₃: There is a combination of the following institutional and faculty variables (accreditation, enrollment size, amount of high school tuition, student computer availability, amount of annual budget, number of ESL students, years of operation, level of teacher education, amount of teacher salary, offering of merit pay, student to teacher ratio, and number of full-time faculty) that predict a school will produce a National Merit Scholarship semifinalist.

Research Hypotheses In Null Form

The null hypotheses related to Research Question 1 are:

H0₁: The accreditation of the school is not related to the school producing a National Merit Scholarship semifinalist.

H0₂: The enrollment size of the school is not related to the school producing a National Merit Scholarship semifinalist.

H0₃: High school tuition is not related to the school producing a National Merit Scholarship semifinalist.

H0₄: The number of school computers available to the students is not related to the school producing a National Merit Scholarship semifinalist.

H0₅: The annual school budget is not related to a school producing a National Merit Scholarship semifinalist.

H0₆: The percent of students for whom English is not their first language is not related to a school producing a National Merit Scholarship semifinalist.

H0₇: The number of years a school has been in operation is not related to a school producing a National Merit Scholarship semifinalist.

The null hypotheses related to Research Question 2 are:

H0₈: The percent of teachers with graduate degrees in a school is not related a school producing a National Merit Scholarship semifinalist.

H0₉: The average teacher salary in a school is not related to a school producing a National Merit Scholarship semifinalist.

 $H0_{10}$: The offering of merit pay for teachers in a school is not related to a school producing a National Merit Scholarship semifinalist.

H0₁₁: The student to teacher ratio of the school is not related to the school producing a National Merit Scholarship semifinalist.

H0₁₂: The number of full time faculty in a school is not related to a school producing a National Merit Scholarship semifinalist.

The null hypothesis related to Research Question 3 is:

H0₁₃: There is no combination of the following institutional and faculty variables (accreditation, enrollment size, amount of high school tuition, student computer availability, amount of annual budget, number of ESL students, years of operation, level

of teacher education, amount of teacher salary, offering of merit pay, student to teacher ratio, and number of full-time faculty) that predict a school will produce a National Merit Scholarship semifinalist.

Identification of Variables

Enrollment size: The 2009-2010 ACSI Annual School Survey item 45a asks participants to provide their current year's enrollment. This is the enrollment of the entire school. The term *school size* may also be used in this dissertation.

High school tuition: The 2009-2010 ACSI Annual School Survey item 56 asks participants to disclose the high school (9-12) tuition rate for a full year in United States (U.S.) dollars.

School computer availability to students: The 2009-2010 ACSI Annual School Survey item 35a asks how many computers the school has for student use. The variable school computer availability to students is calculated by dividing the number of computers the school has for student use by the total enrollment of the school (ACSI 2010 Annual Survey item 45a).

Annual school budget: The 2009-2010 ACSI Annual School Survey item 27 asks the amount of the annual school budget. This term refers to the amount of funds received and spent by the school. A budget is a fiscal instrument that helps carry out the mission of the school.

ESL students: The 2009-2010 ACSI Annual School Survey item 46 asks how many students are in an ESL program. ESL is an acronym for English as a Second Language. ELL is a term also used in the literature. It stands for English Language

Learners. Many of these students would be from another country, while some may be from families who do not speak English as their first language.

Years of operation: The 2009-2010 ACSI Annual School Survey item 11 asks how many years the school has been in operation. This is the total number of academic years the school has offered educational programming.

Percent of teachers with graduate degrees: The 2009-2010 ACSI Annual School Survey item 14b provides this data. A graduate degree includes any master's degree, education specialist degree, or doctoral degree. To have a graduate degree, the teacher must also have a bachelor's degree.

Average teacher salary: The 2009-2010 ACSI Annual School Survey item 65 provides this information. This is the annual teacher salary, excluding benefits for full-time or full-time equivalent faculty in U.S. dollars.

Merit pay: The 2009-2010 ACSI Annual School Survey item 64 asks if the school offers merit pay for K-12 teachers. Merit pay is typically compensation based on classroom results or student performance. It is a controversial topic in education, especially public education (Eggers et al., 2005).

Student to teacher ratio: The 2009-2010 ACSI Annual School Survey reveals two numbers that give the *student to teacher ratio*. Item 45a provides the enrollment number (student) and 13c provides the number of full-time faculty or FTE (teacher). The *student to teacher ratio* is determined using these data elements.

Full-time faculty: The 2009-2010 ACSI Annual School Survey item 13c asks how many full-time faculty the school has. This number does not include support staff or administrators. The schools can include a full-time equivalent (FTE) number also. If

there are two part time faculty members who each teach one-half day, then they equal one full-time faculty member.

Research Plan

This project can be described as a correlational study with research questions which were based on a thorough and scholarly literature review (Ary, 2006). Fraenkel & Wallen (2000) said, "Correlational research is an example of what is sometimes called associational research. In associational research, the relationships among two or more variables are studied without any attempt to influence them" (p. 359). The literature is primarily focused on peer-reviewed education journals, Christian education journals, and education text books published between 2000-2010.

Two archival data sets were used. First the list of ACSI schools that produced National Merit Scholarship semifinalists in 2010 was utilized. Second, the survey results for the 2009-2010 ACSI Annual School Survey were used. The survey results give the reader a picture of the school characteristics for the same year the student was named a scholar. The researcher will use the list of schools that produced scholars to disaggregate the survey results into two comparative groups (those that produced National Merit Scholarship semifinalists and those that did not). Using the 2009-2010 ACSI Annual School Survey results allows the variables to not only be statistically studied among the scholar-producing schools, but also compared to the 1,848 other schools that participated in the study.

The dependent variable is whether or not the school produced a National Merit Scholarship semifinalist in 2010. The independent variables are the institutional and faculty characteristics found in the results of the 2009-2010 ACSI Annual School Survey. Hypotheses regarding the dichotomous dependent variable and the independent variables

were tested using the following statistical approaches: Spearman's correlation and logistic regression (Ary, 2006; Charles & Mertler, 2002; Fraenkel & Wallen, 2000; Gay & Airasian, 2003; Peng, Lee, & Ingersoll, 2002; Ritchey, 2000; SPSS, 2009). Specifics regarding these choices can be found in chapter three. With this research plan, the writer intended to discover institutional and faculty characteristics that are related to an ACSI school producing a scholar.

Definition of Terms

2009-2010 ACSI Annual School Survey: Each year the Association of Christian Schools International (ACSI) conducts an Annual School Survey. The Annual School Survey referred to in this dissertation was conducted in 2009-2010 by Development Testing Services. The survey contained 87 questions and was completed by 1,917 ACSI schools. It was an institutional survey used to gather information from Christian school administrators throughout the United States and report the results to ACSI member schools. The results of this survey were used as an archival data set as described in chapter three. The actual survey is Appendix B and permission to use this data set is Appendix C.

Association of Christian Schools International (ACSI): The ACSI is the largest evangelical school association in the world. It has over 3,500 K-12 schools, over 650,000 students, and over 60,000 teachers (Broughman et al., 2011). This project was focused on ACSI member schools and was endorsed by the association.

Christian day school: The term Christian day school refers to a private K-12 school that has a Christian foundation and focus. Students study traditional subjects such as mathematics, history, and science, but the curriculum is based on Christian worldview

as presented in the Holy Bible. There are also specific classes to study the Bible, Christian history, ethics, and more. Also referred to as Christian schools and private Christian schools, these institutions have organizational systems, facilities, teachers, and students. Using the word *day* separates this term from other terms that refer to Christian preschools and Christian colleges.

Compulsory Law: This term refers to local, state, and federal laws that mandate school attendance. Throughout American history, different regions of the country enacted such laws at different times. The government can enforce these laws by various means, including withholding funds from schools, imposing fines, and taking truant students into custody.

National Merit Scholarship competition: The National Merit Scholarship competition is conducted by the National Merit Scholarship Corporation. It is an annual scholarship program that students enter during their junior year of high school by taking the PSAT/NMSQT.

National Merit Scholarship semifinalist: Each year approximately 1,500,000 students enter the National Merit Scholarship Competition. From this group, only 16,000 of the highest scorers are chosen as semifinalists (National Merit Scholarship Corporation, 2009a). The list of ACSI member schools that produced National Merit Scholarship Semifinalists in 2010 was an archival data set that was used in statistical tests as described in chapter three. Permission to use the data was given by Dr. Derek Keenan, Vice President of Academic Affairs at ACSI, but the actual list is not included for the reader because it identifies the schools by name (See Appendix B).

Preliminary SAT/National Merit Scholarship Qualifying Test (PSAT/NMSQT): The PSAT/NMSQT is taken by students to prepare them for the SAT and to enter them in the National Merit Scholarship competition. It is administered by the College Board and has three sections: mathematics, critical reading, and writing skills. It is administered in October of each year.

Private school: The U.S. Department of Education defines *a private school* as "a school that is not supported primarily by public funds. It must provide classroom instruction for one or more of grades from K-12 (or comparable ungraded levels), and have one or more teachers" (Broughman, 2009, pp. A-1). Some literature also uses the term *non-public school*.

CHAPTER TWO: LITERATURE REVIEW

Introduction

This chapter focuses on the most current and reliable literature regarding Christian education in the United States, the National Merit Scholarship Corporation and programs, school climate, characteristics of highly effective schools, and variables from the 2009-2010 ACSI Annual School Survey which are related to this study. Special attention was given to peer-reviewed journals, Christian education journals, and university-level text books.

The review of literature is divided into five sections. The first section explains the theory of the connection between school climate and student achievement. The second section explores the history of Christian education in the United States with special attention given to ACSI and its Annual School Survey. The third section discusses the National Merit Scholarship Corporation (NMSC) with special detail given to the PSAT/NMSQT and the relationship between ACSI and NMSC. The fourth section details the research regarding each variable that was studied and tested. The fifth section summarizes the chapter by briefly reviewing the key points of the existing literature and identifying the gap in the literature that the present study seeks to fill.

Theoretical Framework

This study is based on the theory of the school climate is connected with student achievement (Freiberg, 1998; Haynes, Emmons, & Ben-Avie, 1997; Hoy & Hannum, 1997; Loukas & Robinson, 2004; MacNeil, Prater, & Busch, 2009; Opdenakker & Van

Damme, 2006; Schoen & Teddlie, 2008; van Houtte, 2005). In the past, many educators viewed school climate (or culture) and student achievement as separate issues. But recent research has shown that not only is there a well-established connection, but "the quality of the climate appears to be the single most predictive factor in any school's capacity to promote student achievement" (Shindler, Jones, Williams, Taylor, & Cadenas, 2009).

In their 2009 study, MacNeil, Prater, and Busch, published findings that "suggest that students achieve higher scores on standardized tests in schools with healthy learning environments" (MacNeil et al., 2009, p. 73). The theory of school climate and student achievement answers the question as to why most reform efforts over the past few decades have failed (cite some of those here). Many reforms did not address the culture and climate of the schools. Shindler et al. (2009) suggested that high achievement test scores are almost impossible in a school with low quality or low functioning climate. Therefore, climate is a very important factor in achievement test scores for both private and public schools.

Many believe that much of the school climate is dependent on the principal (Hall, 2006-2007; MacNeil et al., 2009; Scott, 2006-2007; Wohlstetter et al., 2008). Peterson and Deal (1998) noted that school culture is shaped by leaders on every level: principals, teachers, and parents. It is important for these leaders to maintain a healthy school culture for the students. If attention is drawn away from this important (yet underlying) puzzle piece, the culture can become toxic and unproductive. Developing a healthy school climate requires constant effort of all adults that are a part of the school. Staff, parents, and community members are encouraged to be actively involved (Haynes et al., 1997).

According to MacNeil et al. (2009):

Strong school cultures have better motivated teachers. Highly motivated teachers have greater success in terms of student performance and student outcomes.

School principals seeking to improve student performance should focus on improving the school's culture by getting the relationships right between themselves, their teachers, students and parents. Measuring school climate and using these assessments to focus the school's goals on learning is important for the process of improving the school's academic performance. (pp. 77-78)

Peterson and Deal (1998) define culture as "the underground stream of norms, values, beliefs, traditions and rituals that has built up over time as people work together, solve problems, and confront challenges" (p. 28). In their 2004 study, Loukas and Robinson studied four aspects of perceived school climate: cohesion, friction, competition among students, and overall satisfaction with classes. They found that a positive school climate not only is conducive to adolescent development, but can also protect at-risk students from emotional problems (Loukas & Robinson, 2004). The school's culture is the result of the influence of the principal, teachers, students, and parents (Peterson & Deal, 1998).

There are many instruments which measure school climate. Freidburg (1998) notes, "A healthy school climate contributes to effective teaching and learning.

Instruments for assessing climate can help schools make informed and meaningful changes for the better" (p. 22). As of May 31, 2011, The U.S. Department of Education recommended fifteen survey instruments to measure school climate (Office of Safe and Drug-Free Schools, 2011): Alaska School Climate and Connectedness Survey, American

Institutes for Research Conditions for Learning Survey, California Healthy Kids Survey, California School Climate Survey, California School Parents Survey, The Center for Research in Educational Policy School Climate Inventory, The Center for Social and Emotional Education Comprehensive School Climate Inventory, The Consortium on Chicago School Research Survey of Chicago Public Schools, Culture of Excellence & Ethics Assessment, Effective School Battery, Perceived School Experiences Scale, Pride Teaching Environment Survey, Search Institute Creating a Great Place to Learn Survey, Secondary Classroom Climate Assessment Instrument, and Secondary School Climate Assessment Instrument.

So why is school climate so important? Haynes, et al, (1997) explained:

The study of school climate examines school factors that influence students' success, including how school staff support and develop students' capacity for success. The focus then is not only on student background and motivational factors but also on school context and the quality of interactions among and between students and teachers as explanations of student academic achievement.

(p. 322)

Review of the Literature

Christian education in the United States. Much has been written regarding public and nonpublic education. Christian education, in particular, is not a new thing. Since the first Pilgrims arrived on this continent, families have organized schools for their children and taught the traditions of their faith. According to Kauchak and Eggen (2005), "The beginnings of the relationship between religion and education in America can be traced to the founding of Jamestown in 1607" (p. 162).

History. The study of religion occurred not only in private schools, but in public schools also. The basic curriculum in all schools was the "four R's": reading, writing, arithmetic, and religion (Reed & Prevost, 1993). Christianity has always been an important part of American culture. The basic New England colonial curriculum included the Hornbook (the alphabet, phonics lesson, a Bible verse, and the Lord's Prayer, written on parchment), the New England Primer (the names of the Old and New Testament, the Lord's prayer, the Apostles' Creed, the Ten Commandments, and other religious lessons), and The Bay Psalm Book (a collection of psalms chosen by ministers). The Bay Psalm

Book (1640) was actually the first book written and printed in the colonies (Reed & Prevost, 1993).

The first European Americans only offered homeschooling and private schooling. In the Southern colonies (Maryland, Virginia, North Carolina, South Carolina, and Georgia) education was private. There were private tutors that lived on the plantations and private schools sponsored by the Church of England. There were also apprenticeship schools that taught basic work skills to the poor (Reed & Prevost, 1993). The middle colonies (New York, New Jersey, Delaware, and Pennsylvania) not only offered a variety of religious schools to match their diverse faiths (Dutch Calvinists, Quakers, Lutherans, Baptists, Roman Catholics, Anglicans, Presbyterians, and Jews), but these private schools also taught students in their native languages (Kauchak & Eggen, 2005). Each religious group had their own schools and the ministers were usually the teachers (Reed & Prevost, 1993). The New England colonies (Massachusetts, Connecticut, New Hampshire, and Rhode Island) were less diverse. This made the formation of schools easier because most

of the colonists in these areas had similar Puritan beliefs (Kauchak & Eggen, 2005).

Unlike Massachusetts, Connecticut, and New Hampshire, Rhode Island was a New England colony that embraced religious freedom and did not codify Puritan doctrine into their laws (Reed & Prevost, 1993). Since religious education was very important to educators and community leaders in Colonial Period, many of their school laws also included religious issues.

Massachusetts Bay Colony enacted three important school laws in 1642, 1647 and 1648. These laws brought important changes to the way children were educated. The most famous of these is the 1647 compulsory school law which is known as the Old Deluder Satan Law because the first sentence says "It being one chief project of that old deluder, Satan, to keep men from the knowledge of the Scriptures, as in former times by keeping them in an unknown tongue" (Massachusetts Trial Court Law Libraries, 2010). These compulsory laws were created for religious reasons. Children (and adults) who did not understand the Bible were considered vulnerable to satanic influence (Imber & Van Geel, 2004).

Once the federal government was formed, laws regarding education began to be passed. Because of the 10th Amendment, the federal government was not in control of education, states were. The *Land Ordinance of 1785* and the *Northwest Ordinance of 1787* began a systematic way of funding public education through federal land. These ordinances not only blurred the lines between state and federal responsibility for public education, but they also reinforced the public school's responsibility to teach religion. The *Northwest Ordinance of 1787* contains this sentence: "Religion, morality, and knowledge being necessary to good government and the happiness of mankind, schools

and the means of education shall forever be encouraged" (Kauchak & Eggen, 2005, p. 169).

The education in the United States evolved throughout the decades. Surges in private Christian school enrollment resulted from various court rulings (Reed & Prevost, 1993). Some important court rulings that prompted some churches and families to start new Christian schools include *Gitlow v. New York* (1925), *Pierce v. Society of Sisters* (1925), *McCollum v. Board of Education* (1948), *Brown v. Board of Education* (1954, 1955), *Engel v. Vital* (1962), *Abingdon School District v. Schempp* (1963), *Murray v. Curlett* (1963), and *Swann v. Charlotte-Mecklenburg Board of Education* (1971).

Carper and Laymen describe dissatisfaction as the core reason why many parents have chosen Christian schools throughout history. According to Carper and Layman (2002),

Profoundly dissatisfied with what they perceive to be secularist-not neutral-belief system embodied in the public school curriculum, unsatisfactory behavioral and academic standards, and centralized control of public education, a growing number of conservative Protestants have tried to regain control of their children's education. (p. 504)

From 1920 to 1960, only 150 Christian day schools were started. However, since 1960, more than 8,000 were founded (Carper & Layman, 2002). Many of these have since closed, but the establishment of these schools by conservative evangelical Christians reveals the desire of many American families to separate themselves from public education.

Current Numbers. Currently, private elementary and secondary schools in the

United States account for 24% of all schools, 11% of all students, and 12% of all full-time teachers. Three-fourths of American private schools are religious (Broughman et al., 2011). About 85% of evangelical Christian day schools are associated with local churches, while others are governed by independent bodies, such as a foundations or groups of community leaders (Carper & Layman, 2002). The schools can be very diverse regarding structure, level of religious education, enrollment (as few as 10 to over 2,000), curriculum, and teaching style.

The National Center for Education Statistics (NCES, 2010) identifies 33,740 private schools, 5,077,451 private school students, and 456,266 private school teachers in the United States. Of that number, 5,106 schools categorize themselves as *conservative Christian*. The self-identified conservative Christian schools enrolled 772,951 students and employed 68,538 teachers in 2008 (Broughman, 2009). The U.S. Department of Education categorizes private schools as either Catholic, other religious, or nonsectarian (Broughman et al., 2011). The schools in this research project are members of ACSI, and are therefore in the *other religious* category.

ACSI. The largest evangelical Christian school association is ACSI with over 3,500 K-12 schools, over 650,000 students, and over 60,000 teachers in the United States of America (Broughman, et al., 2011). It is the largest evangelical private school association in the United States and is the largest evangelical private school association internationally. Some literature said ACSI has over 5,900 schools, while other literature says it has over 3,500 schools. To clarify the discrepancy in literature, ACSI has over 5,900 member schools, of which about 3,500 are in the U.S. This study focuses on the schools with American students, including schools in other countries that have American

students, because the National Merit Scholarship program is only for students who are enrolled in ACSI schools within the United States (National Merit Scholarship Corporation, 2009a).

The U.S. Department of Education recognizes many religious school associations. The other large associations of evangelical schools are American Association of Christian Schools with approximately 100,000 students, and Accelerated Christian Education with over 40,000 students (Broughman et al., 2011).

ACSI was founded in 1978 as a result of the merger of three Christian school associations. Soon after that merger, several other Christian school associations joined ACSI, making it the largest Christian school association in the United States (and also the largest in the world). It is headquartered in Colorado Springs, Colorado, and has 26 regional offices worldwide. As an international association, it has 5,900 member schools in over 100 countries that serve more than 1.4 million students. It is a nonprofit organization that is governed by a 36-member elected board (ACSI, 2010a).

The association bases all decisions and programs on a set of core beliefs. These core beliefs stem from the Bible verse, "That in all things He might have the preeminence" (Colossians 1:18). According to its website, the ACSI core beliefs are:

- 1. Biblical Philosophy: A thoroughly biblical philosophy of education should be implemented in Christian schools in all cultural contexts.
- 2. Critical Thinking: Students should learn how to process information and think critically in the context of a Biblical worldview.
- 3. Parental Education Responsibility: Parents have the primary responsibility for the education of their children; the school serves the Christian home.

- 4. Bible as a Core Subject: The teaching of Bible as a core subject is essential to the academic curriculum.
- 5. Academic Excellence: Schools should be committed to academic excellence, maximizing each student's potential.
- 6. Professional Development: Professional resources and training are vital for the development and growth of Christian educators and schools.
- 7. Great Commission: Students and educators in Christian schools worldwide should be involved in the Great Commission by evangelizing and discipling.
- 8. Biblical Integration: The Biblical integration of every planned learning experience is crucial to effective Christian schooling.
- 9. Educational Choice: The opportunity for Christian schooling should be accessible to families as a means of intellectual and spiritual development and formation of a life of service to God and society.
- 10. School Improvement: Christian schools should be involved in a plan of consistent evaluation and assessment for continuous improvement.
- 11. Nondiscrimination: The teaching/learning process in Christian schools should reflect a Christ-like sensitivity, relevant to a diverse school community.
- 12. Networking: The ministry of Christian schooling can best be accomplished through cooperation with other appropriate individuals, agencies, and organizations in providing programs, materials, and services. (ACSI, 2009, para. 1).

Like many organizations, ACSI has a mission statement and a vision statement that guide the organization. Its stated mission is to "enable Christian educators and

schools worldwide to effectively prepare students for life" (ACSI, 2010b, para. 4). ACSI's website also gives the following vision statement:

It is our vision to be an association speaking with a viable and authoritative voice in education and consisting of effective Christian schools recognized as essential and contributing to the public good. [So that] Christian school students worldwide acquire wisdom, knowledge, and a biblical worldview as evidenced by a lifestyle of character, leadership, service, stewardship, and worship.

Specifically, young men and women, products of Christian schooling, will mature to loving God with all their heart, mind, and soul (Matthew 22:37); growing in wisdom and stature (Luke 2:52); living in the world as salt and light (Matthew 5:13-14); and giving sacrificially of themselves and their resources reflecting the essence and love of the Christ who lives and dwells within them (Romans 12:1). (ACSI, 2010b, para. 4)

2009-2010 ACSI Annual School Survey. Each year ACSI surveys member schools. Usable surveys were submitted by 1,917 schools in 2010. The summary of this survey revealed some interesting statistics. Regarding personnel, on average the school's top administrator had been at the school for 9.22 years, the average school had 19 FTE faculty members, 75% of faculty had bachelor's degrees, and 22% had graduate degrees. Regarding the average school budget, the survey revealed a median budget of \$760,000, of which 10.6% of the revenue was provided by fund raising, 6.83% of budget was spent on need-based tuition aid, and 20.4% of families received tuition aid (Development Testing Services [DTS], 2010).

The survey revealed interesting findings concerning enrollment averages. In

2009-2010, enrollment averaged 239 students; in 2008-2009, enrollment averaged 267 students. Also, 2009-2010 enrollment averaged 74% of facility capacity, student retention was 83%, 87% of high school graduates went to college, and the student-teacher ratio was 12.5:1. The average tuition increase for the 2009-2010 school year was 3.6% (DTS, 2010). The results of this survey were used as archival data for statistical research, as described in chapter three.

National Merit Scholarship Corporation

History. The National Merit Scholarship Corporation was founded in 1955. It is an independent not-for-profit organization that conducts two nationwide scholarship competitions each year: the National Merit Scholarship (for all students) and the National Achievement Scholarship Program (for African American students). By partnering with corporations, the program has provided 314,000 scholarships worth \$1.4 billion.

The National Merit Scholarship Corporation (2009b) lists some national leaders (former and current) who were National Merit Scholars including Robert Reich (U.S. Labor Secretary), Mitch Daniels (Indiana Governor), Ben Bernanke (Chairman of Federal Reserve), Bill Gates (Chairman of Microsoft), Mae Carol Jemison (National Aeronautics and Space Administration [NASA] astronaut), John Roberts (Chief Justice of the United States), Susan Rice (United Nations [UN] Ambassador), Jeffrey Bezos (CEO of Amazon.com), and M. Night Shyamalan (film maker).

The National Merit Scholarship Program is an annual academic competition among high school students for the purposes of recognition and college scholarships.

The program is conducted by National Merit Scholarship Corporation (NMSC), a not-for-profit organization that operates without government assistance. The scholarship

program is open for all students in the 11th grade. The first step for entry into the program is taking the PSAT/NMSQT. Each year 3.5 million students take the test, of whom 1.5 million meet the requirements for entry. To enter the National Merit program, a student must be enrolled as a high school student, plan to graduate the following year, and plan to enter college the fall semester after graduation. He or she must also be a citizen of the U.S. or be a lawful permanent resident of the U.S. with plans to become a U.S. citizen. Finally, the student must take the PSAT/NMSQT in his or her third year of high school (National Merit Scholarship Corporation, 2009a).

The process takes 18 months. Students take the test in October of their junior year of high school, and awards are given to that group the spring of their senior year. The test must be taken during the student's third year of high school even if the high school only offers three grades, the student plans to graduate early, the student plans to enroll full-time in college the same year as his or her senior year, or if the high school does not have traditional grade levels.

PSAT/NMSQT. The PSAT/NMSQT was developed and published by The College Board and is administered on a designated Wednesday and Saturday in October of each year. Each high school chooses one of the two dates and the test is administered by the school (The College Board, 2010d). It is taken by 11th graders in the United States and is used to prepare the students for the SAT and as a qualifying test for the National Merit Scholarship program. The scores are not sent to colleges, but the student and his or her high school receive a copy of the score report. (Rubenstein & Robinson, 2008). There is a \$14 fee associated with the test and the students are provided with a copy of the *Official Student Guide to the PSAT/NMSQT* (The College Board, 2010d).

There are three sections of the PSAT/NMSQT: mathematics, critical reading, and writing skills. The mathematics section focuses on basic arithmetic, algebra, and geometry. The critical reading section tests the student's comprehension on a passage he or she just read and also includes vocabulary questions. The writing skills section assesses a student's ability to identify basic errors in English grammar and points of style (Rubenstein & Robinson, 2008).

The College Board website stated that "PSAT/NMSQT scores are reported on a scale of 20 to 80. In 2009, the average score for 11th graders was about 47 in Critical Reading, 48 in Mathematics, and 46 in Writing Skills" (The College Board, 2010e, para.

1). The National Merit Scholarship Corporation uses a selection index to determine eligibility in its programs. The selection index is the sum of the three scores. The average selection index for 11th graders is 141. The student's selection index and national percentile also appear on his or her score report (The College Board, 2010e).

In October 2009, approximately 1.5 million students entered the National Merit Scholarship Competition. From this group, there were 50,000 designated *high scorers*. In April 2010, these students were notified of their status and offered referrals to two colleges or universities. The 50,000 students are divided into two categories based on the selection index: commended students (34,000 students) and semifinalists (16,000 students). The NMSC (2009a) states that "Semifinalists are the highest scoring entrants in each state" (p. 3). ACSI schools that produced National Merit Scholarship semifinalists were the subject of this research. Based on the data available, NMSC designates the semifinalists so that each state is allocated 2% of the total number. At that point, the "NMSC then arranges the selection index scores of all National Merit Program

participants within a state in descending order. The score at which a state's allocation is most closely filled becomes the semifinalist qualifying score" (National Merit Scholarship Corporation, 2009a, p. 6). This effort to be equitable gives the scholarship program a good reputation in the academic community. Critics of the program note the under-representation of minorities and the secrecy of the exact score needed to become a semifinalist (Hoover, 2005; Hoover, 2010). U.S. students who do not live in the 50 states are also eligible for the scholarship program.

The semifinalists are given scholarship applications, which advance them to the *finalist* level. To qualify as a finalist, the student must continue to (a) meet all the entry requirements, (b) continue to stay enrolled in high school, (c) complete the application, (d) have a record of high academic performance, (e) be endorsed by the principal, (f) take the SAT and earn scores that correlate with the PSAT/NMSQT, and (g) provide any documentation that NMSC requests. Typically about 1,000 semifinalists do not become finalists because they fail to meet these criteria.

From this group of 15,000 finalists, most will receive a scholarship from the National Merit Scholarship Corporation, corporations, or colleges. The scholarships offered each year are based on available funding (National Merit Scholarship Corporation, 2009a). The PSAT/NMSQT is administered by the Education Testing Service (ETS), and is owned by the College Board. Research shows the PSAT/NMSQT is an indicator of success on the SAT and college readiness (Proctor et al., 2010).

The use of student achievement tests has grown throughout the last fifty years, especially since the publication of *A Nation At Risk* in 1983 and the *No Child Left Behind Act of 2001*. Some point to indicators other than achievement test scores and grade point

average (GPA) as predictors of student success (Grigorenko et al., 2009). Trumbull (2008) said, "Success and failure in student achievement should no longer be measured in terms of standardized test scores" (p. 1).

Some of the negative views of achievement tests are based on the way the tests are designed, while others point to the problems some students have when taking tests. For example, a writing section was added to settle complaints about bias (Lawson, 1996). A major issue is tying standardized test scores to teacher effectiveness. Many teachers do not want their evaluations to be based on the scores of their students. Not only is teaching to the test an issue, but the moral-hazard problem is also an issue. Trumbull (2008) states that "teachers have assisted students during tests, suggested that some students stay home on testing days, or even altered students' answer sheets" (p. 5).

The review of literature has revealed a gap in uniform assessment in private Christian schooling. Most published private Christian school scores are based on inschool assessments (report card grades) that may be affected by extraneous variables such as grade inflation and curriculum differences (Franz, 2010). This is true when comparing private schools with public schools or private schools with other private schools (ACT Inc., 2009; Armstrong, 2006; Bailey & Cooper, 2009; Cheng & Mok, 2008; Jeynes, 2007; Kauchak & Eggen, 2005; R. J. Kellough & Kellough, 2003; Opdenakker & Van Damme, 2006; Turley, 2009). Since grades given by teachers are subject to extraneous variables, a uniform assessment instrument is needed.

ACSI and the National Merit Scholarship Program

ACSI encourages member high schools to become involved in the National Merit Scholarship Program because it is "another avenue for providing addition educational advancement opportunities for students" (ACSI, 2003-2004, p. 28). In 2001, ACSI was recognized as an accrediting agency by the College Board, the organization that developed and administers the PSAT/NMSQT. This recognition allows students from ACSI member schools to enter the program by taking the PSAT/NMSQT. In the first five years, 800 students from more than 350 ACSI high schools were National Merit Scholarship semifinalists (ACSI, 2003-2004).

Literature Regarding 2009-2010 ACSI Annual School Survey Data Elements

The results of the 2009-2010 ACSI Annual School Survey were used as archival data for statistical testing, as will be described in chapter three. Special attention has been given to selected variables from that survey.

Selected institutional variables related to this study.

Accreditation. Membership in ACSI is not the same as ACSI accreditation, but ACSI does have a thorough accreditation process that member schools can complete. ACSI has this process in place because "accreditation is sought by schools and programs in order to validate their quality and to verify that they are striving for excellence" (ACSI, 2011a, para. 2). The National Council for Private School Accreditation (NCPSA) lists the following characteristics of an accredited school: it is devoted to a mission, it knows itself, it keeps its promises, it accepts objective evaluation, it is recognized, it is self-correcting, it is student-centered, it plans for its future, it examines performance, and it participates in the responsibilities of the academic profession (NCPSA, 2010).

The accreditation process is very time-consuming and data-driven. When school administrators talk about the accreditation or reaffirmation of their accreditation, they may show someone a wall of three ring binders filled with data and reports regarding

their school. Some teachers and administrators say such data do not belong in the educational sphere (Schmoker, 1999). Many schools suffer from a crippling weakness of being uniquely cellular, goal-averse, and data-phobic, but these negative qualities position them for immediate improvement if they change their approach to data. These schools are cautious regarding the restriction of teaching practices by outside entities. Others believe that accreditation is really about accountability. Schmoker (1999) noted that accountability is key for teachers and schools to achieve genuine respect as professionals. Benefits for students who attend accredited private high schools include: ease in transferring credits to other schools, greater access to federal loans, scholarships, postsecondary education, and military programs (AdvancED, 2011).

Enrollment size. The size of the school can be an important factor in academic achievement. In her article published in Best Practices, Best Thinking, and Emerging Issues in School Leadership, Darling-Hammond (2003) notes:

Studies of school organization consistently find that small schools with enrollments of roughly 300-600 promote higher student achievement, higher attendance, lower dropout rates, greater participation in school activities, more positive feelings toward self and school, more positive behavior, less violence and vandalism, and greater post-school success. (p. 84)

Armstrong (2006) notes, "School reformers Thomas Sergiovanni and Deborah Meier recommend no more than 300 students per school" (p. 123). The average school size reported for ACSI member schools in 2010 was 239 (DTS, 2010).

In their article in the *Journal of Research on Christian Education*, Bailey and Cooper (2009) list research findings regarding a smaller school environment. Among

other positive outcomes, a smaller school can provide higher achievement. Alt & Peter (2002) stated, "On average, private schools have smaller enrollments, smaller average class sizes, and lower student/teacher ratios than public schools" (page number). Also, in their U.S. Department of Education report to Congress, Alt and Peter (2002) said private school students perform higher on standardized achievement tests and are more likely to complete a bachelor's or advanced degree by their mid-20s than public school students. Based on the social needs of adolescents, many believe large, impersonal high schools are developmentally inappropriate (Armstrong, 2006).

High school tuition. Research shows a correlation between socio-economic status and standardized test scores and student achievement (ACT Inc., 2009; Hodgkinson, 2003; Hoover, 2005; Owens & Valensky, 2007). Christian school associations do not report how many of their students come from underprivileged homes. Two data elements from the 2009-2010 ACSI Annual School Survey give us a picture of the socio-economic status of the students' families. Survey item 19 gives the percentage of families receiving tuition assistance and survey item 56 gives the amount of high school tuition in U.S. dollars. Almost all private ACSI-member Christian schools charge tuition to the families they serve. Fifty-one percent of ACSI member schools reported their high school tuition to be more than \$5,000 per year (DTS, 2010). The Council on American Private Education (CAPE) reported the average private school secondary tuition in 2007-2008 was \$10,549 (CAPE, 2010). In public schools, the average per pupil expenditure is \$8,700 per year (Aos, Miller, & Pennucci, 2007). Aos et al. (2007) also reported that from 1970-2005, per pupil expenditures have increased at a 2.3% annual rate, when adjusted for inflation.

After a review of U.S. Census records, CAPE (2010) also reported that private education is not the first choice for wealthy Americans. The February 2011 report said there are 8.5 million U.S. families with annual incomes of over \$75,000 (the highest income bracket measured) and school-aged children. Only 12 % of these upper income families chose private schooling (CAPE, 2010, para 4).

School computer availability to students. Access to technology is a key to success in 21st century education. It is important that not only computers are in the school, but that they are available to students. Many studies show the availability of computers to students is strongly related to the students' success and academic achievement (Berger, 2003; Marzano, 2003; Owens & Valensky, 2007).

Annual school budget. Financial issues reflected in the school budget are related to the climate of the school. Verstegen and King (1998) found a strong positive correlation in the amount of money a school spends and higher achievement scores. Brimley and Garfield explain the budgeting process as "defining priorities and needs and receiving and spending funds over a particular period, usual a year" (2008, p. 294). The budget identifies the sources of funds and specifies how the funds are expended. It is a fiscal planning, accounting, and control instrument that reflects the goals and objectives of the school (Snowden & Gorton, 2002). Regarding the importance of budgeting, Brimley and Garfield (2008) note that

education without purpose or philosophical commitment would have little value and would stimulate little, if any, support or dedication. The purposes of education have much to do with the cost of the program that is established and operated to achieve those objectives. (p. 38)

It is interesting that school revenue was found to account for one-third of the variations in proficiency test scores (Verstegen & King, 1998). The cost of operating an educational program usually continues to increase year by year (Brimley & Garfield, 2008). The largest amount of revenue for private schools is tuition and the largest expenditure is salaries (Stump, 2009). Typically, budget outlay for salaries and benefits averages 55-70% of a budget (Oesterreich, 1998). The average annual school budget for ACSI schools in 2010 was \$760,000, with 10.6% of the revenues coming from fundraising and 6.83% of the budget expenditures providing need-based tuition aid (DTS, 2010).

Some research has been done regarding the problems in private educational budgeting. Major outside influences on budget expenditures are inflation and energy costs. Brimley and Garfield (2008) noted, "The erosive effect of high and continuous inflation of the dollar on school budgets needs few illustrations and little documentation for it is an undesirable phenomenon that affects every citizen and every school in the nation" (p. 40). When currency loses its value, it causes people to cut back on purchases and services so they can maintain their lifestyle. One dollar in 1983 had the purchasing power of 48 cents in 2008 (U.S. Census Bureau, 2011a). This may have an effect on parental choice regarding private schooling, but necessitates further research. The increasing costs of fuel and energy also affects school budgets. In some areas of the country, heating costs have increased 50% (Brimley & Garfield, 2008).

Other serious problems in the area of budgetary expenditures include "increasing enrollments, shortages of buildings and classrooms, inadequate facilities, and need to employ greater numbers of teachers and other staff members" (Brimley & Garfield, 2008,

p. 38). The same authors continue the list to include the costs of *high-cost students* with disadvantages, disabilities, and bilingual programs for minority groups. These budget problems affect public and private schools.

ESL Students. There is an increased discussion in public schools regarding the assessments of ELL students. This increase is related to the effect of the ELLs on the Annual Yearly Progress (AYP) of the school (Kopriva, Emick, Hipolito-Delgado, & Cameron, 2007). In some large U.S. school districts, there are as many as 100 languages represented (R. J. Kellough & Kellough, 2003). If counting the ELLs in a public school's AYP affects the score, then we would assume the same for a private school's standardized test scores. No literature was found regarding ELLs PSAT/NMSQT scores from private schools.

Not only were ESL students an issue of research in this study, but they will also be in the future. R. J. Kellough and Kellough (2003) stated, "By the year 2050, the U.S. population is predicted to reach 400 million (from 2001's approximate 283 million), a population boom that is expected to be led by Hispanics and Asian Americans" (p.28).

Years of operation. The years a private school has been in operation reflects many things about the school. Since it is dependent on tuition and donations, a private school can close for various reasons. This variable can indicate strong leadership, a good financial backing, and a high level of success. Over the past fifty years, thousands of private Christian schools have opened and later closed (Reed & Prevost, 1993). The age of the school may be a factor of school climate that affects student achievement, but no research has been found regarding this topic.

Institutional factors in general. There are many relevant school factors when one is researching the effect of institutional and faculty variables on student academic achievement. This problem is also known as "production function research" (Verstegen & King, 1998). When researching the effects of reading intervention, Mortimore and Sammons (1987) found that school factors were "about six times more important than background. For written math and writing, the difference is tenfold" (p. 6).

Armstrong (2006) contends that the purpose of high school is to prepare students to live as successful and independent adults in the real world. In his book, *The Best Schools*, he gives a list of principles of great schools:

- helping students learn to use their minds well
- recognizing that less is more; focusing on depth over coverage
- having goals apply to all students
- personalized teaching and learning
- practicing a student-as-worker, teacher-as-coach approach
- emphasizing demonstration of mastery
- communicating a tone of decency and trust
- expressing a commitment to the entire school
- dedicating resources to teaching and learning
- honoring and modeling democracy and equity

Selected faculty variables related to this study.

This study not only researched the literature regarding institutional factors of the school that may be related to producing scholars, but it also reviewed faculty variables.

Selected faculty variables from the 2009-2010 ACSI Annual School Survey were

researched in peer reviewed journals, Christian education journals, and university-level text books.

Percent of teachers with graduate degrees. Many believe the most important factor affecting student learning is the teacher (Wright, Horn, & Sanders, 1997). Studies show that effective instruction techniques are vital for student success (Armstrong, 2006; Cawelti, 2003; Glasser, 1998; Hetzel & Stranske, 2006-2007; Marzano, 2003; Reeves, 2004, 2006; Riesen, 2006-2007). Many of these instruction techniques can be learned by practice, but many are taught in teacher graduate programs. Studies show a strong link between the level of teacher education and the academic achievement of the students (Darling-Hammond, 2003; Hall, 2006-2007; Marzano, 2003; Oster, 2007; Stronge, 2002). Some studies indicate that the teacher's education is linked to positive student outcomes (Monk, 1994). Archibald's meta-analysis on teacher effects shows mixed findings regarding experience, education, certification, ability, and teacher evaluation score (Archibald, 2006). Ass et al. (2007) analyzed 13 studies with 34 separate effects regarding level of teacher education and student academic success. They concluded "that there is no consistent relationship between teachers with graduate degrees and increased student outcomes as measured by test scores" (p. 21). Recent studies completed by Odden et al. (2004) and Archibald (2006) show the teacher level of education does not influence how much students learn.

Average teacher salary. Teacher salary is an interesting variable to study in educational research. This is an important issue in educational leadership because three-fourths of the expenditures of schools go to pay the salaries of personnel (Brimley & Garfield, 2008).

Salary is an important factor in faculty morale and the quality of teacher that a school can recruit and keep (Eggers, et al., 2005). Some researchers indicate that teacher quality is the single greatest school-based factor impacting student academic performance (Perkins, 2010). In a study completed by Rivkin, Hanushek, and Kain (2005), teacher quality is singled out as the most significant factor in student achievement, and they point out that it explains at least seven percent of the variance in test scores.

In a study of teacher salaries and Florida Comprehensive Assessment Test (FCAT) scores in 63 Florida public school districts, Perkins (2010) found an additional \$1000 in teacher compensation positively corresponds with an increase of 0.475 points in average FCAT Math score. Perkins (2010) concludes:

[The] labor market for teachers is subject to the same microeconomic forces of supply and demand which govern all other markets. Higher compensation for teachers makes the profession a more competitive alternative in the general labor market, leading to higher quality across the workforce. Therefore, teacher salaries constitute a viable policy tool for efforts to improve the performance of public education systems. (p.27)

If labor market factors are involved in the teaching profession, then research showing a positive, statistically relevant relationship between the measure of teacher quality/performance and student achievement is even more important (Archibald, 2006; Roehrig, Bohn, Turner, & Pressley, 2009). Some argue that salaries (included with other school costs) have minor effect on achievement when compared to larger effects such as intelligence and family background (Brimley & Garfield, 2008). Cissell (2010) notes that multiple factors impact student achievement.

Merit Pay. The call for school reform and accountability has brought new attention to the topic of compensating teachers based on the performance of their students on standardized assessments. It is a controversial topic in public and private schools. It is much easier to pay teachers based on their years of service and level of education. Evaluating one's performance can be very subjective and challenging (Brimley & Garfield, 2008; Janey, 1996; Urbanski, 1997). Direct merit pay based on student achievement is becoming more common in many states, districts, and private schools. However the research on how much of an effect the teacher has on student achievement varies (Archibald, 2006; Cissell, 2010; Lubienski, Crane, & Lubienski, 2008; Lubienski & Weitzel, 2008; Odden, Borman, & Fermanich, 2004; Trumbull, 2008). Merit pay is "less controversial when whole schools or groups of teachers (rather than individual teachers) are evaluated and awarded bonuses or salary increases" (Aos et al., 2007, p. 24).

Cissell (2010) noted, "While pay-for-performance programs are growing across the nation, research has yet to determine their effectiveness" (p. 127). Some research showed that teacher incentive programs are unable to produce higher levels of student success (Trumbull, 2008).

Student to teacher ratio. In 2010, the mean student to teacher ratio in an ACSI member school was 12.5 to 1 (DTS, 2010). The average pupil to teacher ratio for all private schools in the U.S. was 10.7 to 1 (NCES, 2010). Student-to-teacher ratio also gives the reader an idea of average class size. There has been much research in the area of class size and its effect on student achievement. Many argue that classes of 20 or fewer students are best. Kauchak and Eggen (2005) noted that reducing class size is

especially beneficial in lower grades and with at-risk and minority students. Critics say class size does not affect student achievement.

The research regarding the effect of class size on student achievement was mixed (Archibald, 2006; Burch, Theoharis, & Rauscher, 2010; Dills & Mulholland, 2010; Gimbert et al., 2007; Unlu, 2007). A study by Dills and Mulholland (2010) revealed that public and private schools had different reasons for class size decisions and different methods for determining which teachers teach smaller and larger classes. In private schools, administrators tend to teach larger classes, and more experienced teachers instruct smaller classes (Dills & Mulholland, 2010). Whatever the reasons for changing the size of a class, policy and program decisions must be made. Burch et al (2010) noted, "When working with classrooms of 15 students or less, teachers cannot simply use the same strategies that they used with larger groups of students" (p.348).

Full-time faculty. The number of full-time faculty is a component of the school climate. The student-to-teacher ratio is dependent on this number. In school reports and surveys, this number also includes FTE. Many researchers believe teachers have a great impact on student achievement (Baumann, 2006-2007; Roehrig et al., 2009). In her 2006 study, Archibald noted, "Teacher performance as measured in as a standards-based teacher evaluation system is positively related to student achievement (p. 35).

Regarding the teacher's effect on student achievement, Goldhaber said teacher related variables are estimated to account for 13% of the variance in student achievement (Goldhaber, 2002). Goldhaber also noted that teacher and classroom effects on student learning are the largest in the education system. Others minimized the teacher's importance by highlighting "prior ability, achievement motivation, effort, socioeconomic,

racial/ethnic, and other family background characteristics [that are] central to understanding individual-level effects on student achievement outcomes" (Odden et al., 2004, p. 18).

Summary

Much research has been completed in the areas of education and student achievement, but there are gaps in the literature regarding private Christian schools. This chapter explained the theoretical basis of the present study- the connection between school climate and student achievement. A detailed account of the history of Christian education in the United States was presented, including the efforts of the colonialists to instill their beliefs to the next generation through the schools. The growth of Christian education over the last fifty years was also examined in light of court rulings and the desire of parents and churches to separate from public education.

The review of literature also included details regarding ACSI, the largest evangelical association in the United States and its annual school survey. The National Merit Scholarship Corporation was introduced as well as the PSAT/NMSQT. This study used the PSAT/NMSQT as a possible uniform assessment tool. An extensive literature review was completed and reported regarding twelve institutional and faculty variables from the 2009-2010 ACSI Annual School Survey that were related to the scope of this study.

There is a noticeable gap in literature regarding the institutional and faculty characteristics of Christian schools that produce scholars. Multiple arguments regarding the variables are in the literature. This review of literature included literature that agreed and disagreed with this study's hypotheses.

By tracing the history of Christian education in America, discussing the ways to assess achievement, and examining the variables that possibly cause school success, this chapter has accomplished the goals of providing current literature regarding the topic.

CHAPTER THREE: METHODOLOGY

Introduction

The purpose of this study is to examine characteristics of ACSI Christian schools that produce National Merit Scholarship semifinalists. The researcher will use a correlational design to examine if faculty or institutional characteristics are related to a school's production of National Merit Scholarship semifinalists.

The data that was used included two previously unrelated archival data sets: the 2009-2010 ACSI Annual School Survey results and the list of ACSI schools that produced National Merit Scholarship semifinalists in 2010. The participants were ACSI member schools. The dependent variable was the yes or no answer to this question: Did the school produce a National Merit Scholarship semifinalist in 2010? Using this one dichotomous dependent variable, the survey respondents were effectively divided into two groups-those that produced a National Merit Scholarship semifinalist and those that did not.

The independent variables were the faculty and institutional characteristics in the 2009-2010 ACSI Annual Survey that were related to the scope of this study. There are many variables in the survey, but only those related to this study were included. The independent variables were accreditation, enrollment size, amount of high school tuition, student computer availability, amount of annual budget, number of ESL students, years of operation, level of teacher education, amount of teacher salary, offering of merit pay, student-to-teacher ratio, and number of full-time faculty.

Research questions and hypotheses were developed based on current literature and the variables from the 2009-2010 ACSI Annual School Survey. Then the hypotheses regarding institutional and faculty characteristics were tested using Spearman's correlation and a logistic regression. Explanations regarding these analysis choices are in the analysis section of this chapter.

Research Design

There are important implications of correlational design. Since an archival data set was used, complete control over the variables did not exist; therefore, the relationship is more suggestive than proven. Since the survey was administered in the past, control cannot be established. When one utilizes correlational research, it is important to control as many variables as possible to eliminate alternative hypotheses (Ary, 2006; Fraenkel & Wallen, 2000; Gay & Airasian, 2003). A correlational study was chosen for this study because archival data was utilized for the purpose of looking for institutional and faculty factors were related to production of a merit scholar. Fraenkle and Wallen (2000) stated, "Correlational research is an example of what is sometimes called *associational research*. In associational research, the relationships among two or more variables are studied without any attempt to influence them" (p. 359).

Control procedures are important to adequately control for extraneous variables. The statistical controls being used are the inclusion of all the relevant variables in a logistic regression model. To control for confounding variables, a logistic regression was completed to minimize the redundancy and get rid of the likelihood of non-useful variables. This helped reduce the risk of Type I errors often accompanied with a study with many independent variables.

Steps to control for confounding variables were taken when meticulously choosing the qualifications for the purposive sample. The total number of schools that participated in the 2009-2010 ASCI Annual Survey was 1,917. The sample was reduced to 682 the schools by removing the schools that did not have a 12th grade. This eliminated the ACSI-member preschools and schools that only offered schooling through the end of 8th grade. This control step was done because the National Merit Scholarship Program is for high school students. Then the schools that had six or more missing answers from the 87-question survey were eliminated. Table 1 shows why six or more was the cut-off point. Keeping surveys with eight or less missing answers would have added three more National Merit Scholarship semifinalist producing schools in the sample, but it would have also kept 160 non-NMS schools that could have up to eight missing answers. This would add many to the sample, but also made lessen the quality of results. These steps reduced the original sample of 1,917 schools to 682.

Table 1

Number of Missing Answers Crosstab

No. of Missing Answers	Non-NMS Schools	NMS Schools	Total
0	435	35	470
1	168	17	185
2	55	2	57
3	23	1	24
4	12	1	13
5	14	2	16
6	56	0	56
7	19	0	19
8	85	3	88
9	11	0	11
10	0	1	1

Using this research design, the following three research questions were developed:

Research Question 1: What institutional characteristics of the school, if any, are related to it producing at least one National Merit Scholarship semifinalist in 2010?

Research Question 2: What faculty characteristics of the school, if any, are related to it producing at least one National Merit Scholarship semifinalist in 2010?

Research Question 3: What combination of institutional and faculty characteristics, if any, predict the school will produce a National Merit Scholarship semifinalist in 2010?

From these research questions came 13 hypotheses (in null form):

The null hypotheses related to Research Question 1 are:

H0₁: The accreditation of the school is not related to the school producing a National Merit Scholarship semifinalist.

H0₂: The enrollment size of the school is not related to the school producing a National Merit Scholarship semifinalist.

H0₃: High school tuition is not related to the school producing a National Merit Scholarship semifinalist.

H0₄: The number of school computers available to the students is not related to the school producing a National Merit Scholarship semifinalist.

H0₅: The annual school budget is not related to a school producing a National Merit Scholarship semifinalist.

H0₆: The percent of students for whom English is not their first language is not related to a school producing a National Merit Scholarship semifinalist.

H0₇: The number of years a school has been in operation is not related to a school producing a National Merit Scholarship semifinalist.

The null hypotheses related to Research Question 2 are:

H0₈: The percent of teachers with graduate degrees in a school is not related a school producing a National Merit Scholarship semifinalist.

H0₉: The average teacher salary in a school is not related to a school producing a National Merit Scholarship semifinalist.

 $H0_{10}$: The offering of merit pay for teachers in a school is not related to a school producing a National Merit Scholarship semifinalist.

H0₁₁: The student to teacher ratio of the school is not related to the school producing a National Merit Scholarship semifinalist.

H0₁₂: The number of full time faculty in a school is not related to a school producing a National Merit Scholarship semifinalist.

The null hypothesis related to Research Question 3 is:

 $\mathrm{H0}_{13}$: A combination of the following institutional and faculty variables (accreditation, enrollment size, amount of high school tuition, student computer availability, amount of annual budget, number of ESL students, years of operation, level of teacher education, amount of teacher salary, offering of merit pay, student to teacher ratio, and number of full-time faculty) does not predict that a school will produce a National Merit Scholarship semifinalist.

Participants

The participants in this study are Christian schools that are members of ACSI and participated in the 2009-2010 ACSI Annual School Survey. There were 1,917

participants in the 2009-2010 ACSI Annual School Survey. From these participants, a purposive sample of 682 schools was used.

Using one dichotomous variable, the survey participants were essentially divided into two groups (See Table 5 for more information regarding this). Since this is not an experimental study, the two groups will not be referred to as the experimental group and the control group. They are comparison groups (Gay & Airasian, 2003). The two comparison groups are ACSI member schools that produced a National Merit Scholarship semifinalist in 2010 and ACSI member schools that did not produce a National Merit Scholarship semifinalist in 2010. Comparison Group 1 is comprised of 56 schools and Comparison Group 2 is made up of 626 schools. Throughout this dissertation, they may be abbreviated as NMS schools and non-NMS schools.

The population of Comparative Group 1 is the 126 ACSI member schools that produced National Merit Scholarship semifinalists in 2010. The sample of Comparative Group 1 is the 56 National Merit Scholarship semifinalist producing schools that participated in the 2009-2010 ACSI Annual School Survey, offered high school grades, and completed nearly all of the survey.

The population of Comparative Group 2 is all ACSI member schools with U.S. high school students. The sample of Comparative Group 2 is the 626 ACSI member schools that participated in the 2009-2010 ACSI Annual School Survey, offered high school grades, and completed nearly all of the survey, but did not produce a National Merit Scholarship semifinalist.

The participants are homogeneous in many ways. Mainly, all are private

Christian high schools that belong to ACSI and that enroll U.S. students. These schools

all have administrators, teachers, and charge tuition. All schools in the data set are members of ACSI. Membership is offered to Christian schools that agree to the ACSI Code of Conduct and Statement of Beliefs (ACSI, 2011b). All schools that were surveyed and all surveyed schools that produced National Merit Scholarship semifinalists were official members of ACSI. This establishes equivalence between groups and reduces the selection threat.

Sample selection

The sample was purposive because they were the schools that participated in the 2009-2010 ACSI Annual School Survey (Fraenkel & Wallen, 2000). Permission to use the data was given by Taylor Smith, Vice President at ACSI (see Appendix C). The other data set is the list of ACSI schools that produced National Merit Scholarship semifinalists in 2010. This data set answered the question, "Did the school produce a National Merit Scholarship semifinalist in 2010?" The yes or no answer to this question is the variable of interest. Permission to use this archival data set was given by Dr. Derek Keenan, Vice President of Academic Affairs at ACSI (see Appendix A).

Setting

The setting for this research is the campuses of the schools that participated in the 2009-2010 ACSI Annual School Survey. It was an electronic survey with the link sent to the administrator of each school via email from ACSI. All ACSI member schools were invited to participate in the 2010 Annual Survey. Over 1,900 school administrators completed the survey and submitted it.

Instrumentation

The 2009-2010 ACSI Annual School Survey was the instrument that provided the archival data set used in this research study. It has been rigorously reviewed yearly for 13 years by administrators of hundreds of Christian schools as they participated in the survey. Eighty to ninety percent of the questions remained the same each year. It was used yearly by the largest Christian school association in the United States, and in the world. ACSI dedicates large amounts of time and funds to administer and analyze this school survey. The survey was created by an expert survey company led by John Shelhammer, the President of Development Testing Services (DTS), who has been developing surveys for Christian schools for twenty years. The questions for this survey were carefully reviewed and approved by the vice presidents of ACSI. The survey experts at DTS and the vice presidents at ACSI worked on the wording of each question with feedback and response from each party. The yearly participants in the survey are all educators and school administrators. In the 13 years DTS has been administering the Annual Survey for ACSI, no respondent has asked for clarification on any question (J. Shelhammer, personal communication, January 31, 2011). Given that this survey has been administered yearly to educators and administrators, the developer of the survey has established face validity, which gives the survey credibility and provides motivation for schools to participate.

The purpose of the 2009-2010 ACSI Annual School Survey is to gather factual information from ACSI member schools. Policy and program decisions are made based on the survey results. The results of each yearly survey are published on the ACSI website. Users can also review results from multiple years (DTS, 2010).

The topics for the survey are School Information, Personnel and Programs, Computers, Development, Enrollment, Tuition and Fees, Salaries and Wages, Benefits, Missions, and ACSI Services. The entire 2009-2010 ACSI Annual School Survey is included as Appendix B. Refer to the appendix for specific questions regarding content, scales, and scoring.

There are 87 questions in the 2009-2010 ACSI Annual School Survey. The scales vary throughout the survey. School administrators responded to some survey items by answering questions such as "Is your school accredited?" thus allowing the respondent to select no or yes. Many questions ask the respondent to input a number, such as item 13, which has a blank after the words "Number of full-time faculty (FTE)."

Table 16 gives the wording of selected survey items regarding institutional variables. Table 17 gives the wording of selected survey items regarding faculty variables. Appendix B is the entire 2009-2010 Annual School Survey.

Measures of internal reliability such as Cronbach's alpha were not calculated for this survey because the types of responses solicited were not primarily related to opinions. When opinions are aggregated to create a summary score, then Cronbach's alpha would be an appropriate metric. However, given that the primary content of the survey is factual information (number of students, amount of tuition, etc.), reliability measures were not calculated. Factual information in this study is extremely reliable. For example, the tuition amount variable from the survey will not change for a school if any reliability tests were conducted. If the tuition is \$5000, then that number will not change if a test-retest method was used.

Regarding validity, the 2010 ACSI Annual School Survey has face validity and content validity. Face validity refers to the survey being deemed suitable and relevant by the respondent (the experts at ACSI who evaluate the questions yearly) and the interested public who view the results (Nevo, 1985). Content-related validity is "the degree to which an instrument logically appears to measure an intended variable; it is determined by expert judgment" (Fraenkel & Wallen, 2000, p. 662). The experts who judge this survey are the hundreds of educational leaders who participate in the survey each year.

Procedures

Two data sets were used with the permission of ACSI. The first is the list of schools that produced at least one National Merit Scholarship semifinalist in 2010. The second is the survey data for the 2009-2010 ACSI Annual School Survey.

Permission to access the first data set was granted by the vice president of ACSI (See Appendix A). School names, categorized by state, were given to me in Microsoft Word format. This information was converted to Excel spreadsheets for easier manipulation with SSPS.

After receiving Liberty University's Institutional Review Board approval (Appendix D), Taylor Smith, Vice President at ACSI, was contacted. He granted my request for the raw data from the 2009-2010 ACSI Annual School Survey from ACSI. This data set has the survey responses from 1,917 schools. After receiving permission to use the data set (Appendix C), ACSI's contracted survey company, DTS, was contacted. DTS released the data results in SPSS format. Two variables were then added to the data set: one indicating whether or not the school produced a National Merit Scholarship semifinalist, and the number of semifinalists the schools produced.

In order to determine the search criteria regarding which variable to test, the researcher asked the question, "What factors are related to academic excellence?" Through a combination of personal experience, literature review, and informal conversations with knowledgeable colleagues, the tentative list was generated. The individual items on the survey were then compared against this list of academic excellence factors to generate the hypotheses for this study. These variables were used to test the hypotheses using the most appropriate statistical procedures, as described in the data analysis section below.

After the data was received from ACSI, the schools that did not have a 12th grade were removed from the sample, thus eliminating the preschools and schools that only offered schooling through the end of 8th grade. This was done because the National Merit Scholarship Program is for high school students. Then the schools that had six or more missing answers from the 87-question survey were eliminated (See Table 1 for rationale). These steps reduced the original sample of 1,917 schools to 682. If any survey question was left blank, the median response for that question was substituted in its place. Table 2 explains the measurement of each variable. Upon thorough cross referencing between the two data sets, it was determined that 56 schools that produced National Merit Scholarship semifinalists in 2010 also successfully completed the 2010 ACSI Annual School Survey using the criteria above.

Table 2

The Measurement of Selected Variables

Variable (Survey Item)	Measurement
Accreditation (5)	Dichotomous (Yes or No)
School size (45a)	Continuous
High school tuition (56)	Continuous
Computer availability (35a & 45a)	Continuous
Annual school budget (27)	Continuous
ESL students (46)	Continuous
Years of operation (11)	Continuous
Teacher's having graduate degrees (14b)	Continuous
Teacher Salary (65a)	Continuous
Merit Pay (64)	Dichotomous (Yes or No)
Student to teacher ratio (13c & 45a)	Continuous
Full-time faculty (13c)	Continuous

Data Analysis

Archival data from the 2009-2010 ACSI Annual School Survey was analyzed using SPSS. It is an archival data set used by permission of ACSI. The dichotomous variable of interest (or dependent variable) is whether or not the school produced a National Merit Scholarship semifinalist in 2010. The faculty independent variables that

helped answer Research Question 1 were accreditation, enrollment size, amount of high school tuition, student computer availability, amount of annual budget, number of ESL students, and years of operation. The institutional independent variables that helped answer Research Question 2 were level of teacher education, amount of teacher salary, offering of merit pay, student-to-teacher ratio, and number of full-time faculty. To answer Research Question 3, a hypothesis was generated to test if a combination of any of the selected institutional and faculty variables listed in the first two research questions predicts that a school is likely to produce a National Merit Scholarship semifinalist.

All correlations, except for one, were tested using the Spearman Rank Correlation Coefficient test in SPSS. It is a non-parametric measure of statistical dependence between two variables (Ary, 2006; Charles & Mertler, 2002; Fraenkel & Wallen, 2000; Gay & Airasian, 2003; Gravetter & Wallnau, 2004). In many social science correlational studies, the Pearson product-moment correlation coefficient is used because it shows the strength of the relationship between two variables (Gay & Airasian, 2003). It should only be used if both variables are continuous. In this study, the variable of interest for all correlational tests is the dichotomous answer to this question: Did the school produce a National Merit Scholarship semifinalist in 2010? Initially, the research plan called for the use of point-biserial correlation because one of the variables is dichotomous and the other is continuous (Gay & Airasian, 2003). However, data was skewed, and the Spearman's Correlation test is recommended for data that are skewed or have outliers (Zou, Tuncall, & Silverman, 2003). Because of the skew (only 8.2% of the schools had the variable of interest), SPSS converted the raw scores to ranks for the correlation (see Table 5). Ranking the scores and running the Pearson correlation test removed the problem of

skewed data and made this research more credible (Zou et al., 2003). Many believe Spearman's correlation should only be used on ordinal data, but it is actually used in two situations. Gravetter and Wallnau (2004) state the following:

First the Spearman correlation is designed to measure the relationship between variables measured on an ordinal scale of measurement. In addition to measuring relationships for ordinal data, the Spearman correlation can be used as a valuable alternative to the Pearson correlation, even when the original raw scores are on an interval or a ratio scale. (p. 542).

This study falls within the second situation mentioned by Gravetter & Wallnau (2004).

Also, Howell (2002) said Spearman's correlation coefficient for ranked data is an appropriate correlation for data in which the raw scores have been substituted with ranks.

This provided accurate results of correlational significance.

The final hypothesis sought to discover if a combination of any of the variables that were tested in the first 13 hypotheses (accreditation, enrollment size, amount of high school tuition, student computer availability, amount of annual budget, number of ESL students, years of operation, level of teacher education, amount of teacher salary, offering of merit pay, student to teacher ratio, and number of full-time faculty) would predict the production of a National Merit Scholarship semifinalist (independent variable). A logistic regression was used to analyze this data with SPSS. The dependent variable was determined to be dichotomous because the majority of the 56 schools had only one semifinalist and a few of the others had more than one. Peng, Lee, and Ingersoll (2002) noted "logistic regression is well suited for describing and testing hypotheses about relationships between a categorical outcome variable and one or more categorical or

continuous predictor variables" (p. 4). Other candidates for analysis when one is testing a dichotomous dependent variable are discriminant analysis and a standard multiple regression. Because of the type of data and the reason for the test, a logistic regression was deemed to be the appropriate approach.

The order of the variables was not important to this study, so all twelve variables were included in the logistic regression. A logistic regression is an appropriate statistical test for mixed and categorical data sets (Peng et al., 2002). In contrast to direct logistic regression and sequential logistic regression, this was a stepwise logistic regression. The stepwise logistic regression was utilized to allow the SPSS to select those variables that were most helpful in explaining whether a school had a National Merit Scholarship semifinalist. According to Howell (2002), "Logistic regression is a technique for fitting a regression surface to data in which the dependent variable is a dichotomy" (p.583). Logistic regression allowed for various types of independent variables to be tested as a predictor of group membership (Peng et al., 2002). In addition, "Logistic regression requires no restrictive assumptions on the independent variables, which can be categorical or continuous" (Howell, 2002, p. 583)

Table 3 explains the three research questions that guided this study and the thirteen hypotheses developed from the complete review of literature on school climate and achievement.

Table 3

Research Questions with Related Hypotheses, the Survey Variable Data Elements and Appropriate Statistical Approaches to Answer the Hypotheses

Research Question	Hypothesis	Data Elements (Survey Variable)	Statistical Approach

Research Question

1: What institutional characteristics of the school, if any, were related to it producing at least one National Merit Scholarship semifinalist in 2010?

The accreditation of the school is related to the school producing a National Merit Scholarship semifinalist.	Accreditation (5) NMS school	Spearman's Correlation
The enrollment size of the school is related to the school producing a National Merit Scholarship semifinalist.	School size (45a) NMS school	Spearman's Correlation
High school tuition is related to a school producing National Merit Scholarship semifinalists.	High school tuition (56) NMS school	Spearman's Correlation

The number of school computers available to the students is related to the school producing a National Merit Scholarship semifinalist.	Computer availability (35a & 45a) NMS school	Spearman's Correlation
The annual school budget is related to the school producing a National Merit Scholarship semifinalist.	Annual school budget (27) NMS school	Spearman's Correlation
The percent of students for whom English is not their first language is related to the school producing a National Merit Scholarship semifinalist.	ESL students (46) NMS school	Spearman's Correlation
The years the school has been in operation is related to the school producing a National Merit Scholarship semifinalist.	Years of operation (11) NMS school	Spearman's Correlation

Research Question

2: What faculty characteristics of the school, if any, are related to it producing at least one National Merit Scholar in 2010?

The percent of teachers with graduate degrees in the school is related to the school producing a National Merit Scholarship semifinalist.	Teacher's having graduate degrees (14b) NMS school	Spearman's Correlation
The average teacher salary in the school is related to the school producing a National Merit Scholarship semifinalist.	Teacher Salary (65a) NMS school	Spearman's Correlation
The offering of merit pay for teachers in the school is related to the school producing a National Merit Scholarship semifinalist.	Merit Pay (64) NMS school	Spearman's Correlation
The student to teacher ratio of the school is related to the school producing a National Merit Scholarship semifinalist.	Student to teacher ratio (13c & 45a) NMS school	Spearman's Correlation
The number of full- time faculty is related to the school producing a National Merit Scholarship semifinalist.	Full-time faculty (13c) NMS school	Spearman's Correlation

Research Ouestion A combination of NMS School Logistic regression 3: What the following Accreditation (5) combination of institutional and School size (45a) institutional & faculty variables High school tuition (accreditation. (56)faculty enrollment size, Computer characteristics, if any, are related to amount of high availability (35a & the school school tuition, 45a) student computer producing a Annual school National Merit availability, amount budget (27) of annual budget, *Scholarship* ESL students (46) number of ESL Years of operation semifinalist in 2010? students, years of (11)operation, level of Teacher's having teacher education. graduate degrees amount of teacher (14b)salary, offering of **Teacher Salary** merit pay, student to (65a)teacher ratio, and Merit Pay (64) number of full-time Student to teacher faculty) predicts a ratio (13c & 45a)

school will produce

a National Merit

Scholarship semifinalist.

Alpha for the study was set at p < .05, however, given the large sample (N = 682) even trivial relationships and differences will be statistically significant. Therefore, measures of effect size (correlations & Cramer's V) will be included to ensure the likelihood that the findings will be both statistically significant and educationally relevant. Bonforoni will not be necessary given that even trivial differences will be statistically significant at the p < .001 level. For this study, educational relevance will be defined as moderate strength correlation, which is r = .30 according to Cohen (1988).

Full-time faculty

(13c)

(Fraenkel & Wallen, 2000) noted "samples should be as large as a researcher can obtain with a reasonable expenditure of time and energy. A recommended number of subjects is . . . 50 for a correlational study" (p. 124). The sample for this study was 682.

After running the logistic regression test in SPSS, the following information was addressed in the analysis: an overall evaluation of the logistic model, statistical tests of individual predictors, goodness-of-fit statistics, and an assessment of the predicted probabilities (Peng et al., 2002).

Regarding the assumptions that should be verified, Peng, et al. (2002) explains: Unlike discriminant function analysis, logistic regression does not assume that predictor variables are distributed as a multivariate normal distribution with equal covariance matrix. Instead, it assumes that the binomial distribution describes the distribution of the errors that equal the actual *Y* minus the predicted *Y*. The binomial distribution is also the assumed distribution for the conditional mean of the dichotomous outcome. This assumption implies that the same probability is maintained across the range of predictor values. (p. 9-10)

Summary

Literature and explanations regarding the use of correlational research were presented in this chapter. This provided credibility to the design by discussing specific limitations and strengths, and what could be gained from this type of research. The participants and the setting were also introduced. The 2009-2010 ACSI Annual Survey was identified as the instrument used to create the data set. The validity and reliability of this instrument were described in detail. The procedures used, and cautionary steps taken, were also explained. The research design was described with detail and scholarly sources. The research questions, null hypotheses, variables, and statistical approaches were identified, described, and presented in paragraph and table format.

Intricate detail was given regarding data collection and the data analysis. Specific information about how the data was collected and how the statistic appropriately controlled for extraneous variables was given. Discussion about confidentiality and how it was ensured was also covered. This correlational study utilized only data that was collected in 2010 by ACSI; no human subjects were used.

CHAPTER FOUR: FINDINGS

Introduction

The purpose of this study was to reveal the institutional and faculty characteristics of Christian schools that produce National Merit Scholars. Specifically, this study sought to discover the related institutional and faculty characteristics of ACSI Christian schools that produced National Merit Scholarship semifinalists in 2010. The data sets used were archival survey data from the 2009-2010 ACSI Annual School Survey and an archival list of ACSI member schools that produced National Merit Scholarship semifinalists in 2010. Prior to this study, these two data sets had never been combined for statistical analysis. A sample of 682 ACSI member schools was used. In that sample, 56 schools produced National Merit Scholarship semifinalists, while 626 did not (See Table 5).

The accuracy of data entry was assured through proofreading the original data and comparing it to a computerized listing of that same data. The effect size was measured based on the correlation coefficients. Given the large sample, power was not an issue. The decision to reject or fail to reject the null hypothesis was based on p < .05. In all three cases the hypothesis was supported and the null hypothesis was rejected.

Results

The following descriptive statistics provide an overall picture of the sample regarding the selected variables for this research project. For the variables that were dichotomous or the variable was a range in the data set, frequency counts were used. The final table in this section displays the results for the variables in which the survey

respondents actually entered a number. This allowed me to record the mean, standard deviation, upper limit, and lower limit in table format.

Whether or not the school was accredited was a tested variable and is described in Table 4. Of the sample of 682 schools, 448 schools (65.7%) were accredited, and 234 schools (34.3%) were not accredited. This variable was a *yes* or *no* answer on the survey. A *yes* answer did not necessarily mean the school was ACSI accredited. There are other accreditation bodies that the schools could belong to.

Table 4

Frequency Counts for Accredited Schools (N = 682)

Variable	Category	n	%
Accreditation			
	Accredited	448	65.7
	Not Accredited	234	34.3

The dependent variable in this study was whether or not a school produced at least one National Merit Scholarship semifinalist in 2010. These data were obtained from ACSI, as documented in chapter three and in Appendix A. Table 5 shows 56 schools, or 8.2% of the sample, produced National Merit Scholarship semifinalists in 2010. As explained in chapter three, the sample includes ACSI schools that also participated in the 2009-2010 ACSI Annual School Survey. The sample schools also had to have a 12th grade and less than five missing answers from the survey. Table 5 also shows how skewed the data was. Because of this skew, Spearman's correlation was performed so the data was converted to ranks first (Zou, Tuncall, & Silverman, 2003).

Table 5 Schools that Produced National Merit Scholarship Semifinalists (N = 682)

		%
Non-NMS School	626	91.8
NMS School	56	8.2
	Non-NMS School	

The same archival data list from ACSI schools that produced National Merit Scholarship semifinalists in 2010 also listed the number of nominees from each school. Of the sample, 41 schools had one semifinalist, 12 schools had two semifinalists, two schools had three semifinalists, and one school had five semifinalists (See Table 6). No schools in the sample had four semifinalists. These data are useful for future research, which detailed in chapter five.

Frequency Counts for Schools with 0-5 National Merit Scholarship Semifinalists (N=682)

Table 6

Variable	Category	n	%
Number of Semifir	nalists		
	0	626	91.8
	1	41	6.0
	2	12	1.8
	3	2	0.3
	5	1	0.1

Survey item 11 asks how long the school has been in operation. There were eight possible responses ranges: 0-5 years, 6-10 years, 11-20 years, 21-30 years, 31-50 years; 51-75 years, 76-100 years, and 100 or more years. Table 7 explains the details of the results. More schools selected 31-50 years of operation than any of the other ranges. Fifty percent of the sample schools fell within the two responses ranges covering 21-50 years of operation. Only 12 schools were older than 100 years.

Table 7

Years of Operation (N = 682)

Variable	Category	n	%
Years of Operation			
	0-5 years	32	4.7
	6-10 years	68	10.0
	11-20 years	166	24.3
	21-30 years	146	21.4
	31-50 years	195	28.6
	51-75 years	51	7.5
	76-100 years	12	1.8
	100 or more years	12	1.8

Item 46 of the survey asked school administrators what percent of their students were ELL. Table 8 gives the descriptive data regarding this variable. Most schools (78.9%) reported having 0-5% of their students as ELL. Surprisingly 44 schools (or 6.5% of the sample) reported 50% or more of their students were ELL.

Table 8

Percent of ELL Students (N = 682)

Variable	Category	n	%
Percent of ELL Students			
	0-5%	538	78.9
	6-10%	40	5.9
	11-25%	37	5.4
	26-49%	23	3.4
	50% or more	44	6.5

In the sample, school administrators were asked to report their annual high school tuition by selecting one of the following ranges: less than \$3,000, \$3,000-\$3,499, \$3,500-\$3,999, \$4,000-\$4,999, \$5,000-\$5,999, \$6,000-\$6,999, \$7,000-\$7,999, \$8,000-\$9,999, \$10,000-\$11,999, \$12,000-\$13,999, \$14,000-\$15,999, and \$16000 or more. The range most commonly selected by respondents was \$5000-\$5,999 with 150 schools (22.0%). Over 53% of the schools indicated their high school tuition to be between \$4,000 and \$6,999. Almost 9% of the schools indicated their high school tuition to be less than \$3000, while just three schools (0.4%) responded that their high school tuition was over \$16,000. See Table 9 for specific details regarding this variable.

Table 9

Ranges of High School Tuition Amounts (N = 682)

Variable	Category	n	%
High School Tuition			
	Less than \$3,000	60	8.8
	\$3,000-\$3,499	44	6.5
	\$3,500-\$3,999	53	7.8
	\$4,000-\$4,999	122	17.9
	\$5,000-\$5,999	150	22.0
	\$6,000-\$6,999	90	13.2
	\$7,000-\$7,999	56	8.2
	\$8,000-\$9,999	62	9.1
	\$10,000-\$11,999	21	3.1
	\$12,000-\$13,999	13	1.9
	\$14,000-\$15,999	8	1.2
	\$16,000 or more	3	0.4

In the survey, school administrators were asked if they offered merit pay. They were given two choices: *no* or *yes*. Of the sample schools, 87.4% said no, while 12.6% of the schools said yes. The survey did not define merit pay, ask how it was determined, ask if it is offered to all faculty members, or ask for specific information.

Table 10 Schools that Offer Merit Pay (N = 682)

Variable	Category	n	%
Merit Pay for Faculty			
	Yes	86	12.6
	No	596	87.4

The average teacher salary in the sample schools is indicated in Table 11. All sample schools chose one of five average annual salary ranges in U.S. dollars. The ranges were less than \$20,000, \$20,000-\$24,999, \$25,000-\$29,999, \$30,000-\$39,999, and \$40,000-59,999. Sixty-one percent of the schools indicated an average teacher salary of less than \$25,000.

Table 11

Average Teacher Salary (N = 682)

Variable	Category	n	%
Average Teacher Salary			
	Under \$20,000	133	19.5
	\$20,000-\$24,999	283	41.5
	\$25,000-\$29,999	156	22.9
	\$30,000-\$39,999	94	13.8
	\$40,000-\$59,999	16	2.3

Descriptive data (mean, standard deviation, lower limit, and upper limit) for seven of the survey items can be seen in Table 12. The number of computers per 100 students and number of students per faculty member were calculated using division. Three variables had a lower limit of zero: the percent of teachers with graduate degrees, the number of computers per student, and the number of computers per 100 students. Note that the variable *Operating Budget* is recorded in thousands. This was done to preserve table clarity and maintain standard column widths. The actual mean operating budget for the sample schools was \$2,189,180. The standard deviation was \$2,737,767. The lowest annual school budget reported was \$15,000 and the highest was 31,000,000.

Table 12

Descriptive Statistics for Selected Variables (N = 682)

Variable	M	SD	Low	High
Number of Faculty	26.57	24.56	1.00	275.00
Percent of Teachers with Graduate Degrees	25.52	17.24	0.00	100.00
Operating Budget (in thousands)	2,189.18	2,737.77	15.00	31,000.00
Computers for Students	62.79	122.94	0.00	2,500.00
Enrollment	331.54	334.18	1.00	2,977.00
Number of Computers per 100 Students	21.81	18.59	0.00	171.00
Number of Students per Faculty Member	13.88	19.20	0.72	392.00

Analysis of Hypotheses 1-7 (RQ 1)

Research Question 1 asked: What institutional characteristics of the school, if any, are related to it producing at least one National Merit Scholarship Semifinalist in 2010? Seven hypotheses were developed and tested using Spearman's correlation for each variables testing for a relationship between the institutional characteristics and the variable of interest. Assumption testing is not needed when using Spearman's correlation because it is a non-parametric correlation (Gravetter & Wallnau, 2004; Fraenkel & Wallen, 2000).

Table 13 displays the relevant Spearman correlations. Six of the correlations were significant. Specifically, having one or more National Merit Scholarship semifinalists was related to the school when the school was a larger school (r_s = .26, p < .001), charged higher tuition (r_s = .22, p < .001), had more computers available for student use (r_s = .20, p < .001), had a larger operating budget (r_s = .27, p < .001), was an older, established school (r_s = .27, p < .005), and was accredited (r_s = .14, p < .001).

This set of findings provided support to fail to reject null hypothesis 7, because the percentage of ESL students was not significantly related to a school producing a National Merit Scholarship semifinalist. This set of findings provided support to reject null hypotheses 1, 2, 3, 4, 5, and 7 because accreditation, enrollment size, tuition, number of school computers for student use, budget amount, and age of school were found to be statistically related to the school producing a National Merit Scholarship semifinalist.

Reject H0₁. The accreditation of the school is not related to the school producing a National Merit Scholarship semifinalist.

Reject H0₂. The enrollment size of the school is not related to the school producing a National Merit Scholarship semifinalist.

Reject H0₃. High school tuition is not related to the school producing a National Merit Scholarship semifinalist.

Reject H0₄.The number of school computers available to the students is not related to the school producing a National Merit Scholarship semifinalist.

Reject H0₅.The annual school budget is not related to a school producing a National Merit Scholarship semifinalist.

Fail to Reject H0₆. The percent of students for whom English is not their first language is not related to a school producing a National Merit Scholarship semifinalist.

Reject H0₇.The number of years a school has been in operation is not related to a school producing a National Merit Scholarship semifinalist.

Table 13

Spearman Correlations for Selected Institutional Variables with Whether the School

Produced at Least One National Merit Scholarship Semifinalists (N = 682)

Variable	At Least One N	NMS semifinalist ^a
Accreditation ^a	.14	****
School Size	.26	****
High School Tuition	.22	****
Computer Availability	.19	****
Number of computers per 100 students	06	
Annual School Budget	.27	****

Percentage of ESL Students

Years of Operation .11 ***

-.04

^a Coding: 0 = No 1 = Yes

* p < .05. ** p < .01. *** p < .005. **** p < .001.

Analysis of Hypotheses 8-12 (RQ 2)

Research Question 2 asked: What faculty characteristics of the school, if any, are related to it producing at least one National Merit Scholar in 2010? Table 14 displays the Spearman correlations between whether the school had at least one National Merit Scholarship semifinalist and selected faculty characteristics. These correlations test hypotheses 8-12.

Having one or more National Merit scholarship semifinalists was related to the school when the school had a higher percentage of teachers with graduate degrees (r_s = .15, p < .001), offered higher pay for teachers (r_s = .17, p < .001), had a merit pay policy (r_s = .10, p < .01), had a larger enrollment size (r_s = .26, p < .26), had more faculty members (r_s = .25, p < .001), and had a higher number of students per faculty member (r_s = .09, p < .05). The enrollment number was included in this table because it was used along with the number of faculty members to mathematically determine the number of students per faculty member.

The results of these separate correlational tests indicate the need to reject null hypothesis 8-12, because graduate degrees, average teacher salary, offering of merit pay, student to teacher ratio, and number of full-time faculty are each, individually related to a school producing a National Merit Scholarship semifinalist.

Reject H0₉. The percent of teachers with graduate degrees in a school is not related a school producing a National Merit Scholarship semifinalist.

Reject $H0_{10}$. The average teacher salary in a school is not related to a school producing a National Merit Scholarship semifinalist.

Reject H0₁₁. The offering of merit pay for teachers in a school is not related to a school producing a National Merit Scholarship semifinalist.

Reject H0₁₂. The student to teacher ratio of the school is not related to the school producing a National Merit Scholarship semifinalist.

Reject H0₁₃. The number of full time faculty in a school is not related to a school producing a National Merit Scholarship semifinalist.

Table 14 Spearman Correlations for Selected Faculty Variables with Whether the School Produced at Least One National Merit Scholarship Semifinalist (N = 682)

Variable	At Least One NMS semifinalist ^a
Teachers having graduate degrees	.15 ****
Teacher Salary	.17 ****
Merit Pay ^a	.10 **
Enrollment	.26 ****
Number of Faculty	.25 ****
Number of students per faculty member	.09 *

^a Coding: 0 = No 1 = Yes

Analysis of Hypothesis 13 (RQ 3)

Research Question 3 asked: What combination of institutional and faculty characteristics, if any, are related to the school producing a National Merit Scholarship semifinalist in 2010? The related alternative hypothesis predicted that at least one combination of institutional and faculty characteristics is related to the school producing a National Merit Scholarship semifinalist. To test this hypothesis, a logistic regression model was developed to determine whether the school produced at least one National Merit Scholar semifinalist based a series of variables (Table 15). Howell (2002) stated, "Logistic regression is a technique for fitting a regression surface to data in which the dependent variable is a dichotomy" (p.583). The variables for this model were all institutional and all faculty variables from hypotheses 1-13. In logistic regression SPSS

^{*} p < .05. ** p < .01. *** p < .005. **** p < .001.

does not give a percent of variance accounted for by each variable as it does for multiple regression.

Odds ratio (abbreviated OR) is a useful statistic that clearly describes the degree to which one variable influences another (Howell, 2002). Table 15 displays the results of the logistic regression model predicting whether the school had at least one NMS semifinalist based on 13 predictor variables. The model was significant, $\chi^2(13, N = 682) = 61.37$, p = .001. Inspection of the odd ratios found 1 of 13 predictors to be significant. Specifically, schools with a lower percentage of ESL students were more likely to have at least one NMS semifinalist, OR = 0.70, 95% CI = 0.50 to 0.99, p = .04 (Table 200).

Given that 56 of the 682 schools (8.2%) had at least one semifinalist, the base classification rate for this model was 91.8%. The final correct classification rate for the model was 91.8%. Specifically, 623 of 626 non-NMS schools were correctly classified (99.5%, true negatives) and 4 of 56 NMS schools were correctly classified (7.1%, true positives).

Given the results of the logistic regression, the null hypothesis 13 is rejected.

Reject H0₁₃. A combination of the following institutional and faculty variables

(accreditation, enrollment size, amount of high school tuition, student computer availability, amount of annual budget, number of ESL students, years of operation, level of teacher education, amount of teacher salary, offering of merit pay, student to teacher ratio, and number of full-time faculty) does not predict a school will produce a National Merit Scholarship semifinalist.

Table 15

Prediction of Whether the School Produced at Least One National Merit Scholarship

Semifinalist Based on Selected Variables. Stepwise Logistic Regression (N = 682)

							95% <i>CI</i>	
Variable	В	SE	Wald	df	p	OR	LL	UL
Enrollment	0.00	0.00	1.56	1	.21	1.00	1.00	1.00
Tuition	0.15	0.10	2.27	1	.13	1.16	0.96	1.40
Number of computers								
for students	0.00	0.00	1.09	1	.30	1.00	1.00	1.01
Number of computers per								
100 students	-0.01	0.02	0.55	1	.46	0.99	0.96	1.02
Operating budget	0.00	0.00	2.00	1	.16	1.00	1.00	1.00
Percentage of ESL students	-0.35	0.18	4.04	1	.04	0.70	0.50	0.99
Years in existence	0.15	0.11	1.69	1	.19	1.16	0.93	1.44
ACSI accredited	-0.37	0.48	0.59	1	.44	0.69	0.27	1.76
Percentage of teachers with								
graduate degrees	0.01	0.01	1.08	1	.30	1.01	0.99	1.03
Teacher salary	0.06	0.18	0.11	1	.74	1.06	0.74	1.52
Merit pay for faculty members	-0.58	0.38	2.38	1	.12	0.56	0.27	1.17
Number of faculty members Number of students per	0.02	0.01	2.00	1	.16	1.02	0.99	1.04
faculty member	0.00	0.01	0.32	1	.57	1.00	0.99	1.02
Constant	-2.63	1.41	3.49	1	.06	0.07		

Note. CI = confidence interval; B = intercept; SE = standard error; Wald = Wald χ^2 significance; df = degree of freedom; p = probability; OR = odds ratio; UL = upper limit; LL = lower limit.

 $\chi^2(13, N = 682) = 61.37, p = .001.$

Base classification rate: 91.8%. Final classification rate = 91.8%.

Summary

The purpose of this study was to uncover any institutional and faculty characteristics of Christian schools that produce scholars. Correlational tests were

performed on archival data from the 2009-2010 ACSI Annual School Survey and the dichotomous variable of interest (where or not the school produced a National Merit Scholarship semifinalist in 2010). The results showed six institutional variables that were related to the school producing a National Merit Scholarship semifinalist: accreditation, school size, high school tuition, student computer availability, annual school budget, and years of operation. Five faculty variables were related to a school producing a National Merit Scholarship semifinalist: teachers having graduate degrees, teacher salary, offering of merit pay, student-to-teacher ratio, and number of full-time faculty.

CHAPTER FIVE: DISCUSSION

Introduction

In this research project, I intended to discover the institutional and faculty characteristics of ACSI Christian schools that produced National Merit Scholarship semifinalists. This chapter will compare my findings to current literature, analyze the results, and give appropriate recommendations.

In the years I spent working on my M.A., Ed.S. and Ed.D., I noticed a gap in literature regarding the characteristics of academically successful Christian schools. Actually, literature did not give a good definition of academic success in private Christian schools. In an effort to find a definition, I discovered that, unlike public school districts and states, the major Christian school associations do not have a reporting code so they can receive the SAT or ACT reports of their students. If one wishes to base academic success of a Christian school or group of Christian schools on achievement test scores, this creates a problem.

In my research and discussions, I discovered that ACSI did not have access to, or knowledge of, the high school achievement scores of its students, but it did have a yearly list of schools that produced National Merit Scholarship semifinalists. These students became semifinalists because of their scores on the PSAT/NMSQT, which they took in the 11th grade. For this study, the academic success of a school was defined as producing at least one National Merit Scholarship semifinalist.

The review of literature on the connection of school climate and student achievement revealed varied opinions regarding the effect of schools and teachers on

student academic achievement. Most literature on schools and teachers and student achievement are production function studies, effective schools studies, and school-effects/teacher-effects studies (Archibald, 2006).

During the discovery phase of my research, Dr. Derek Keenan, Vice President of Academic Affairs at ACSI, recommended that I look at the association's school survey. When I reviewed the summarized results of 2009-2010 Annual School Survey on the ACSI website, I saw many institutional and faculty variables that literature related to student academic achievement. Considering the survey was completed by almost two thousand schools, and most of the National Merit Scholarship-producing schools, I decided to use the results of the study as archival data for my research.

The review of literature and a careful examination of the survey led to three research questions:

Research Question 1: What institutional characteristics of the school, if any, were related to it producing at least one National Merit Scholarship semifinalist in 2010?

Research Question 2: What faculty characteristics of the school, if any, were related to it producing at least one National Merit Scholar in 2010?

Research Question 3: What combination of institutional and faculty characteristics, if any, were related to the school producing at least one National Merit Scholarship semifinalist in 2010?

Using correlational statistical models, I tested 13 hypotheses. A final hypothesis looking for a combination of predictors was tested using a logistic regression. To help answer Research Question 1, hypotheses were generated that tested the following institutional variables from the 2009-2010 ACSI Annual School Survey that were within

the scope of this study: accreditation, enrollment size, amount of high school tuition, student computer availability, amount of annual budget, number of ESL students, and years of operation. To help answer Research Question 2, hypotheses were generated that tested the following faculty variables from the 2009-2010 ACSI Annual School Survey that were within the scope of this study: level of teacher education, amount of teacher salary, offering of merit pay, student to teacher ratio, and number of full-time faculty. To answer Research Question 3, a hypothesis was generated to test if a combination of any of the selected institutional and faculty variables listed in the first two research questions predicts that a school is likely to produce a National Merit Scholar. Each hypothesis is related to one of the data elements from the 2009-2010 ACSI Annual School Survey that was within the scope of this study based on the literature review.

Six institutional variables were related to the school producing a National Merit Scholarship semifinalist: accreditation, school size, high school tuition, student computer availability, annual school budget, and years of operation. The years of operation variable was found to be statistically significant at p < .005, while the other five were found to be statistically significant at p < .001. The percent of English language learners was not significant.

Regarding the type of variables that were measured, accreditation was a dichotomous No or Yes answer that was coded 0 = No and 1 = Yes. The variables school enrollment, high school tuition, and computer availability were each continuous variables in which the respondent inputted a number. The variables annual operating budget and years of operation were also continuous variables in which the respondent selected a

dollar range and year range, respectively. Table 16 gives the exact wording of the questions related to these variables.

Table 16

Institutional Variables Measured with Survey Item Number and Question

Significant Variable Measure	Survey Item Number and Question
Accreditation	5) Is your school accredited?
School Enrollment	45a) Current year's enrollment
High School Tuition	56) High School 9-12 (Full year, \$USD)
	35a) How many computers does your
	school have for student use?
Computer Availability	45a) Current year's enrollment
	27) Annual operating budget (including
Annual School Budget	facility operation costs)
Years of Operation	11) Years the school has been in operation

All five selected faculty variables were related to the school producing a National Merit Scholarship semifinalist: teachers having graduate degrees, teacher salary, offering of merit pay, student-to-teacher ratio, and number of full-time faculty. Unexpectedly, the result regarding student-to-teacher ratio indicated that the more students there were per teacher in a school, the more likely the school was to produce a National Merit Scholarship semifinalist. According to C. Smitherman (personal communication, June

20, 2011), this could be due to a number of factors. For example, some survey respondents reported having only one faculty member. A homeschool cannot be a member of ACSI alone, but a homeschool association can, and sometimes those homeschool associations that belong to ACSI report only one credentialed teacher. Accreditation of homeschool groups is an area of future research. Other possible reasons for this result are respondent error in completing the survey or respondent fatigue because the survey is so long and detailed.

To help understand the methodology and the instrument used, Table 16 provides a connection between the significant variables measured and the exact survey item number and question from the 2009-2010 ACSI Annual School Survey. The variable *percent of teachers having graduate degrees* was a number the respondent inputted. The variable *teacher salary* was a choice of salary ranges. The variable *merit pay* was a dichotomous *No* or *Yes* answer. The variable *enrollment* was a number inputted by the responded. The variable *number of faculty* was a number inputted by the respondent. The *number of faculty per student* was calculated by dividing the number of faculty by the number of students. Table 17 gives the exact wording of the questions that were related to these variables.

Table 17

Faculty Variables Measured with Survey Item Number and Question

Significant Variable Measured Survey Item Number and Question		
Teachers having		
graduate degrees	14b) Percent of full-time faculty members with graduate degrees	
	65a) Annual teacher salaries, K-12: Annual amounts, excluding	
Teacher Salary	benefits, full-time or full-time equivalent only, \$USD	
Merit Pay ^a	64) Do you offer merit pay for teachers?	
Enrollment	45a) Current year's enrollment	
Number of Faculty	13c) Number of full-time faculty (FTE)	
Number of students		
per faculty member	13c) divided by 45a)	

The final hypothesis was tested using a logistic regression to see if there was a combination of the variables that would predict the likelihood of a school producing a National Merit Scholarship semifinalist. I tested all of the selected variables in the regression. This logistic regression concluded that a school that is not in Southern California, had higher tuition, and had a larger operating budget was more likely to produce a National Merit Scholarship semifinalist. Please see Table 15 in chapter four for complete details regarding the logistic regression analysis.

Findings in Light of the Literature

Literature that agrees with my findings. The results show that the number of enrolled students was positively related to a school producing a National Merit

Scholarship semifinalist. Darling-Hammond (2003) noted that schools with enrollments of 300-600 promoted higher achievement, among other positive effects. The average enrollment size of the sample was 331 (see Table 12).

The results also showed that higher tuition may predict that the school will produce a scholar. There was not much research regarding private school tuition and achievement, but there was literature on cost per pupil in public schools and socioeconomic status. This result was similar to the published works of ACT (2009), Hodgkinson (2003), Hoover (2005), and Owens and Valensky (2007) who indicated socio-economic status is related to standardized test scores and student achievement.

Berger (2003), Marzano (2003), and Owens and Valensky (2007) agreed that the availability of computers for student use is strongly related to the students' success and academic achievement. This literature was similar to my findings.

In terms of faculty characteristics, the literature regarding the relationship of teachers to student academic achievement varies. My findings showed all five selected faculty variables studied were related to student academic achievement. Literature showed a strong link between the level of teacher education and the academic achievement of the students (Darling-Hammond, 2003; Hall, 2006-2007; Marzano, 2003; Oster, 2007; Stronge, 2002). Similar to Archibald (2006), Baumann (2006-2007), and Roehrig et al. (2009), my results showed a positive significant correlation between the number of teachers at a school and their effect on student academic achievement.

Goldhaber (2002) noted that teacher and classroom effects on student learning are large, but teacher-related variables are estimated to only account for 13% of the variance in student achievement.

Literature that disagrees with my findings. In an effort to find this study's place in the body of literature, I also wanted to address literature that disagrees with my findings. Bailey and Cooper (2009) had an interesting article in the *Journal of Research on Christian Education* regarding school size in which they listed research findings regarding smaller school environments. Among other things, a smaller school can provide higher academic achievement. Odden et al. (2004) and Archibald (2006) said the level of teacher education does not influence how much students learn. My results showed that the higher percentage of teachers with graduate degrees worked in a school, the more likely the school was to produce a National Merit Scholarship semifinalist.

Merit Pay is a controversial topic in private and public schools. My study revealed that the offering of merit pay for faculty is positively related to a school producing a National Merit Scholarship semifinalist. Cissell (2010) and Trumbull (2008) disagreed. In opposition to the theory of the connection of school climate and student achievement, Odden et al. (2008) elevated variables such as "prior ability, achievement motivation, effort, socioeconomic, racial/ethnic, and other family background characteristics central to understanding individual-level effects on student achievement outcomes" (p.18). Others agreed by indicating student background is key when predicting student achievement. (Lubienski et al., 2008; Lubienski & Weitzel, 2008). Difference in measured achievement "reflects both the ability levels of those students and the likelihood that they came from families committed to education to the degree that they would pay tuition (and often transportation) costs for their children's education" (Lubienski et al., 2008, p. 693).

Synthesis and summary of the literature. To synthesize the current literature with my research findings, I have pondered why some studies have agreed with my results and other studies have disagreed with my results. One possible explanation for the difference between some literature and my findings is methodology. I used a large sample of archival data, which could produce different findings than a case study.

Another possible explanation for the differences is that most literature regarding these issues used data from public schools. Data from private schools are difficult to retrieve because private schools are not required to release scores like public schools are. Also, The College Board (who publishes the PSAT/NMSQT and SAT) and ACT, Inc. will not provide an identification code for Christian school associations like school districts have that provide reports of the student participation and scores (D. Keenan, personal communication, December 21, 2010). Also, many reports that use data from private, public, and homeschools (such as the PSAT/NMSQT annual state reports), do not separate the scores to show the averages from Christian school students. Finally, one possible explanation for the differences in controversial issues (such as merit pay) is researcher bias. Many people are passionate regarding the topic of merit pay and the desire to research and write on the topic may come from an internal bias.

Conclusions and Implications

This study is an important piece of the puzzle regarding the connection of school climate and student achievement. The lessons learned in this quantitative, correlational study are significant, and the large sample of 682 schools helps give the study credibility. A survey of the 126 ACSI member schools that produced National Merit Scholarship semifinalists in 2010 could have revealed interesting results, but using the archival survey

results of 682 schools allowed me to compare and contrast certain differences in the variables between the schools that produced National Merit Scholarship semifinalists and those that did not.

The results of this research study will help school leaders (boards, principals, associations, and parent organizations) as they seek to make policy decisions in respect to institutional and faculty variables. My research found six institutional variables that were related to the school producing a National Merit Scholarship semifinalist: accreditation, school size, high school tuition, student computer availability, annual school budget, and years of operation. All of these characteristics, except for two (school size and years of operation) can be directly influenced by decisions of school leaders. These are not easy decisions or changes, but since they are truly related to student academic achievement, school leaders and parents should seek to become accredited, increase high school tuition, increase the numbers of computers available for students, and increase the annual school budget. Each of these decisions may take years to implement, but if student academic achievement is a top priority, then schools should seek to align themselves with these related characteristics.

The other two institutional variables that I found to be related to producing National Merit Scholarship semifinalists are characteristics that parents may choose to look for when searching for a private school. Knowing that larger, older schools may produce more National Merit Scholarship semifinalists might influence parents when choosing a Christian school for their children. A new, small school is not able to automatically become an old, larger school, but the school can focus on institutional characteristics that are related to producing scholars.

One of the institutional variables tested was not related to a school producing a National Merit Scholarship semifinalist: the percent of English language learners. This may help school leaders when determining reasons for their students' scores on achievement tests like the PSAT/NMSQT. The reason for their school's average score is probably not related to the school's percentage of English language learners.

All five faculty variables of focus were related to a school producing a National Merit Scholarship semifinalist: teachers having graduate degrees, teacher salary, offering of merit pay, student-to-teacher ratio, and number of full-time faculty. These five characteristics are definitely policy issues and the results of this study can be used as the basis to make principal or board decisions and parent or school association recommendations. Since payroll is the largest portion of most school budgets, these issues should be considered carefully.

Regarding teachers having graduate degrees, a school should consider this variable in the hiring process and when allocating funds for professional development/continuing education for faculty. There are many online and residential graduate degree programs that are designed for teachers who are working full-time. Knowing this relationship should encourage teachers to seek higher education for themselves so they can help students reach high levels of academic achievement.

Higher teacher salary and the offering of merit pay were both found to be related to a school producing a National Merit Scholarship semifinalist. The results of this study give a principal and school board more data to consider when making decisions regarding compensation of teachers. The sample revealed that 60% of the schools paid their teachers less than \$25,000 a year. It is important to contrast this to the average salary for

a worker in the United States with a bachelor's degree, which is \$58,613 (U.S. Census Bureau, 2011b).

Limitations. As with most research projects, this one was limited by time and resources. Using the archival data set limited the variables I could test. There are some questions I would have liked the sample to have been asked regarding curriculum, years of teacher experience, rural/urban/suburban setting, denominational affiliation, board type, professional development, the principal's role in the sponsoring church, acceptance policies, parental involvement, and socio-economic status. These are all variables that can be studied in the future, but using an archival data set limited the research to the variables that appeared in the original survey.

There are inherent threats to a correlational design. Gay & Airasian (2003) note some problems for researchers to consider when interpreting correlational methods. Some of these problems are: using the proper correlation method to calculate the correlation, the possibility of low reliabilities, knowing if the variables are valid, and knowing if the range of scores is restricted or extended.

There are several problems that can arise when one uses survey research, including pressure on the respondents to respond with a certain answer, reliability and validity of the survey instrument, characteristics or bias of the data collector, location, and instrument decay (Fraenkel & Wallen, 2000). Specific limitations regarding the 2009-2010 ACSI Annual School Survey include respondent fatigue because of its length, respondent fear that their responses are not anonymous, and the fact that it was designed to be an institutional survey rather than specifically for this study. Care should be taken not to make invalid inferences based on the results (Hausman & Wise, 1979).

This research study is limited to ACSI member Christian high schools. This study uses archival data sets, so the researcher is limited by that data ACSI has made available. The instrument was not chosen or created by the researcher; it is an institutional survey written to provide information for ACSI, not specifically for this dissertation. Also, the sample is purposeful, thus creating a possible problem with generalizing the results.

There are fewer quality Christian and private school journals as compared to non-Christian and public education journals. A thorough review of literature was completed, but some of the variables were not specifically addressed in current Christian and private school journals. Limitations necessitate future research.

Delimitations. This research study is narrowed in scope because of the population studied, the literature reviewed, and the methodological procedures used. This study focused on ACSI-member Christian high schools. The research questions and hypotheses tested were narrowly focused on ACSI-member Christian high schools; I did not intend to generalize the results. In the literature review, I purposefully tried to place more attention on Christian and private education journals. Though the number of Christian and private education journals is limited, many were high quality and were peer-reviewed. Using these journals helped keep the variables in proper context.

Finally, I used correlational methodology based on archival data. The use of archival data had many benefits. The benefits included the fact that the data had already been gathered and it was already in SPSS format. This saved valuable time and finances since I am not trained in the SPSS software and relied on the help of a very experienced statistician who guided me step by step. The assistance of an experienced statistician gives this study greater credibility in contrast to a research project in which a non-

statistician doctoral candidate attempts to test hypotheses using a complicated program such as SPSS.

The biggest benefit of this archival data set was the large sample size. One thousand, nine hundred, seventeen schools participated in the 2009-2010 ACSI Annual School Survey. It would be very difficult for a doctoral student to get new data from such a large number of schools. Even though the use of archival data bound my research to the variables of that study, the benefits of the large sample out-weighed those limitations. Other variables that were not part of the 2009-2010 ACSI Annual School Survey can be studied in the future.

Recommendations

Questions for future research. Based on the literature review and my findings, I submit the following research questions for further research:

- What family characteristics, if any, are related to a student becoming a National Merit Scholarship semifinalist?
- What national achievement test best predicts student academic achievement?
- What characteristics of a school, if any, are related to a student scoring higher on the ACT?
- What characteristics of a school, if any, are related to a student scoring better on the SAT?
- What family characteristics of homeschool students, if any, are related to a student earning a high score on a national achievement test?
- What curriculum choices by ACSI-member schools are related to a school producing a National Merit Scholarship semifinalist?

- What difference is there, if any, if the Christian school administrator also serves as pastor of the school's sponsoring church?
- What relationship, if any, does school organizational structure have on student academic achievement?

Methodological Enhancements. There are a few methodological enhancements that could help a future researcher answer these research questions. For example, instead of using the 2009-2010 Annual School Survey archival data, one could survey each ACSI-member school that produced a National Merit Scholarship semifinalist in a given year, the last five years, or even the last ten years. This might enhance the study.

A qualitative method, such as case studies of the ACSI-member schools that produced more than four National Merit Scholarship semifinalists in 2010, would be very interesting. A study using that methodology would also enhance a study like this and add to knowledge on this topic.

This study was based on the theory of the connection of school climate and student achievement. The U.S. Department of Education lists some very interesting school climate survey instruments that are available (Office of Safe and Drug-Free Schools, 2011). Another methodological enhancement would be the use a school climate survey instead of the 2009-2010 ACSI Annual School Survey.

Finally, one challenge in this study was finding the definition of a scholar-producing school. I decided to focus on schools that produced at least one National Merit Scholarship semifinalist because the students are chosen based on their scores on the PSAT/NMSQT. One suggestion for enhancement of this study, or an idea for future research, is to use the SAT-10, ACT, or SAT scores as a measure of student academic

achievement, or comparing the scores of the PSAT/NMSQT and the SAT-10, ACT, or SAT.

Policy Recommendations. Based on the literature review and the results of my research study, I have policy recommendations for Christian school associations, public school districts, and the publishers of national achievement tests. Christian school associations should review their accreditation manuals to ensure the institutional and faculty variables are addressed. Associations should also encourage implementation of policies that align with the characteristics addressed in this study. Finally, Christian school associations are encouraged to pursue the release of data regarding Christian schools from ACT, Inc.

Public school districts should read the results of this study and research the same variables in their schools in an effort to learn what public school institutional and faculty variables are related to the schools producing scholars. The public school districts have access to the ACT scores for their district (D. Clark, personal communication, August 24, 2010). This will give them an alternative definition for *scholar* if they choose.

The purpose of this study was to find characteristics of Christian schools that produce scholars. One of the most difficult things was finding a definition for the term *scholar* because SAT and ACT do not give scores to Christian school associations like they do for public school districts. I encourage SAT and ACT to provide an identification code for the major Christian school associations that students use on the test so the associations can track the participation of their schools and students. SAT does provide a breakdown of scores by public, religiously affiliated, independent, other, or unknown. The 2010 report shows *religiously affiliated* students scored higher on all

three sections (critical reading, mathematics, writing) of the SAT (The College Board, 2010a).

Practitioner Recommendations. This quantitative research study revealed eleven school variables that are related to schools producing National Merit Scholarship semifinalists. Regarding practical recommendations, a Christian high school principal should note the six institutional variables were related to a school producing a National Merit Scholarship semifinalist: accreditation, school size, high school tuition, student computer availability, annual school budget, and years of operation. These are issues on which a principal has influence. Many schools struggle with finances because they want to be the less expensive than the comparable Christian schools in the area. But if higher tuition and a higher budget are related to a school producing scholars, then the principal may want to re-think his or her philosophy regarding tuition. All five faculty variables were related to the school producing a National Merit Scholarship semifinalist: teachers having graduate degrees, teacher salary, offering of merit pay, student-to-teacher ratio, and number of full-time faculty.

Based on the literature review and the results of this research I recommend all Christian high schools to seek accreditation, plan to increase enrollment, budget more funds for student computers, hire teachers with graduate degrees, offer tuition reimbursement for teachers seeking graduate degrees, increase teacher salaries so they are the average for the local community, offer merit pay to faculty based on performance, and increase the number of teachers on their campus. Finally, the Christian school principal should seriously consider increasing the annual school budget by increasing tuition to an amount that will allow the school to accomplish these tasks.

Summary

There are thousands of private Christian schools in the United States, but literature does not agree on a unifying school-related factor that results in high academic achievement. There are multiple arguments in literature, many theories, and multiple practices, but no identifiable common factor that breeds excellence. This was the problem I sought to answer with this study.

The review of literature showed a connection between school climate and student achievement (Freiberg, 1998; Haynes et al., 1997; Hoy & Hannum, 1997; Loukas & Robinson, 2004; MacNeil et al., 2009; Shindler et al., 2009; van Houtte, 2005). There are many institutional and faculty characteristics that contribute to the climate or culture of the school, but many of these characteristics have not been formally studied in the private Christian school setting.

In 2010, almost 2000 ACSI member school participated in the 2009-2010 Annual School Survey. Also in that year, students from 126 ACSI member schools were designated National Merit Scholarship semifinalists. Using the list of these schools and the results of the school survey as archival data sets, I ran quantitative correlational statistical tests (Spearman's) and a logistic regression to see if selected institutional or faculty variables from the school survey were related to the school producing a National Merit Scholarship semifinalist.

The results of the correlational tests were interesting. Eleven tested variables were significant: accreditation, school size, high school tuition, student computer availability, annual school budget, years of operation, teachers having graduate degrees,

teacher salary, offering of merit pay, student-to-teacher ratio, and number of full-time faculty.

I also included all the selected variables in a logistic regression to find a combination of variables that may predict that a school will produce a National Merit Scholarship semifinalist. The results of the logistic regression indicated a school that is not in southern California, had higher tuition, and had a larger operating budget was most likely to produce a National Merit Scholarship semifinalist.

This study adds to the research of school and teacher effectiveness by using respected statistical tests to discover significant relationships in the data of a large sample of Christian schools. Because of this research, the education community now knows eleven specific faculty and institutional variables that are related to ACSI Christian schools producing National Merit Scholarship semifinalists.

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APPENDIX A ACSI Permission to use National Merit Data





ASSOCIATION OF CHRISTIAN SCHOOLS INTERNATIONAL

Enabling Christian

Educators and Schools

Worldwide

April 7, 2011

RE: National Merit Scholarship Data from ACSI

TO: Whom It May Concern

This letter validates that Christopher "Adam" Clagg has requested and has been given permission by the Association to use the annual report of National Merit Finalists in ACSI schools for his doctoral research study. This data is compiled from the Annual Report of National Merit Semi-finalists, produced by the College Board.

The compiled data accurately reflects the ACSI member schools with National Merit Semi-finalists and is compiled by the Academic Services of fice of the Association.

Sincerely

Derek J. Keenan Ed.D. Vice President, Academic Affairs

Appendix B

ACSI Annual School Survey 2009–10

Thank you for completing the 2009–10 ACSI Annual School Survey.

You may complete the survey in more than one session if necessary, as long as you return to the survey from the same computer you're using right now.

1) School Information

If you came to the survey via email invite, we show your Zip code as: %q212%.

If not, enter Zip or Postal Code

2) Continent	
O North America	
Europe	

- Africa
- O Asia
- O Australia/NZ
- O Central America/South America
- O Caribbean

3) In what ACSI region is your school located?

O	Florida
O	Mid-America
O	Northeast
O	Northern California/Hawaii
O	Northwest
O	Ohio River Valley
0	Rocky Mountain

- South-Central
- O Southeast
- Southern California
- O International: Eastern Canada
- O International: Western Canada
- O International schools in Asia
- O International schools in Europe, Middle East, Africa and countries of former Soviet Union
- O International schools Latin America, or Commonwealth of Independent States

4) Did you	ı complete this survey last year?
	O no O yes
5) Is your	school accredited?
	O no O yes
	" by whom? (mark all that apply)
[[ACSI State Regional Other
7) Your so	chool is:
	IndependentChurch SponsoredMission Sponsored
8) School	Board or Board Counterpart
	O Governance O Advisory
9) Numbe	er of board members
	2 1–5 2 6–10 2 10+
10) Gende	er make-up of your board (%)
Male Female	% %
Years the sch	nool has been in operation
 ○ 0-5 ○ 6-10 ○ 11-20 ○ 21-30 ○ 31-50 ○ 51-75 ○ 76-10 ○ > 100 	0

11)

12) What grade	s does your sch	ool offer? Che	ck all that apply.
□ Stan	d-alone Preschool		
	chool connected w	ith other K-12	orograms
	4 year old kinderga		nograms
	ergarten	arteri)	
☐ First	•		
☐ Seco			
☐ Third			
☐ Four			
☐ Fifth			
☐ Sixth			
□ Seve			
□ Eight	-		
☐ Ninth			
☐ Tent			
☐ Eleve	enth		
□ Twel	fth		
13) Person	nel and Pr	ograms	
13) 1 613011	ner ana r r	ogranis	
Number of	years Chief Admin	istrator has	
been with t		istrator rias	
	administrators on	staff (FTF)	
	full-time faculty (F		
	, (/	
14) Percent of f	full-time teache	rs with:	
•			
Bachelor's	degrees		%
Graduate d			
	om Christian colleg	jes or	%
universities	ı		
15) Percent of:			
- "		=	
	eachers who will re	tire within 5	%
years			0/
Administrat	ors who will retire	within 5 years	%
16) Diagon india	+b:-b -f +b	a fallauring va	u baya at yayı sabaalı
16) Please indic	cate which of th	e rollowing yo	u have at your school:
		T	٦
V 1 "	no	yes	\dashv
Your own website	• •	0	-
Technology	. 0	•	
Director/Coordinate	tor	1	

Certified library/media professional	•	•
Program for special needs students	0	•
Post-High School courses	0	•
Current Crisis Plan	O	O
Security Official/Personnel	0	•
School Library	O	O
Before/after care for school aged children	O	O

17) Please indicate your major media source(s) for research and reference (check all that apply):

	no	yes
Book collection	0	0
Subscription databases	0	•
e-books	0	0
Internet in general	0	•

18)	Does your	school nav	e a family	tuition assi	stance pro	gram?

0	no
0	yes

19)	If so, t	the perce	ent of fam	ilies receiv	ing tuition	assistance
-----	----------	-----------	------------	--------------	-------------	------------

%
_

20) Please indicate:

	no	yes
Does your school have Student Accident Insurance?	0	0
If so, is it through an ACSI-provided vendor?	0	0

21) Regarding your before/after school care for school aged children:

Are you	required t	o be	licensed	by	the	state	?

O yes O no

22) What department provides oversight of the program?

- Early Education
- Elementary
- O Administrator's Office
- Other

23) Online Education

How would you describe your interest in online education?

- O Curious how it works
- O Looking into it
- Planning to get involved
- Already using it online
- O Have no plans or interest

24) International

Please indicate if your school has:

	no	yes
SEVIS registered (I- 17) program to host international students	O	O
ESL program	O	O
Boarding program	O	•
Participated in outbound exchange program for teachers	O	•
Participated in outbound exchange program for students	O	O

Number of students in your ESL program Number of students in your boarding program		- -
26) Regarding I-20 International Students,		
The percent of your student body represented by I-20 Students: The number of I-20 Students enrolled in your school: The number of outbound exchange students: The number of outbound exchange teachers:		
27) Budget-Related		
Please provide amounts in U.S. Dollars (\$USD) Note: when entering amounts, do not include dollar signs or commas.		
Annual operating budget (include facility operation costs)		
\$dollar amounts only)	(whole	
dollar amounts only)	(whole	
dollar amounts only) 28) Last year's operating budget	(whole	
dollar amounts only) 28) Last year's operating budget	(whole 	
dollar amounts only) 28) Last year's operating budget \$	(whole	
dollar amounts only) 28) Last year's operating budget \$ 29) What percent of your budget revenue comes from tuition? O Less than 60% O 60-75% O 76-80% O 81-90%	(whole	

31) What percen demonstrated ne		jet is used for	tuition aid for families with a	
				%
32) Government	Assistance or	Funding		
Does your school	receive some	form of gover	nment assistance or funding?	
O yes O no				
33) Please indica	nte governmer	nt assisted cat	egories:	
	no	yes]	
Federal services? (NCLB/Title Money)	•	0		
State services? (School Choice/State funded programs/Business tax credits)	•	O		
Provincial services? (Funding)	•	O		
☐ Materi☐ Admin☐ Profes☐ Transp☐ Food☐ Health☐ Textbo☐ Testin☐ Accrec☐ Univer	als istrative/Profess sional Developn portation ooks g litation Facilitati	sional Services nent on	rovided by government fundir	ıg:
35)				
Computers	}			
How many comp	uters does you	r school have?	?	
for student u for administr				

O Dial-up O DSL O Cable O T-1 O Unsure o O N/A	of type				
37)					
Developmen	nt				
Does your school h	ave:				
	no	yes, Volunteer	yes, part-time	yes, full-time]
Development Department/Director	•	•	•	•	
Admissions Department/Director	O	•	O	0	
 38) Does the school Yes No 39) Does the school Yes No 40) Percent of bud 	ol have an End	dowment?	ncourage contr	ibuted suppor	t?
(The net amou percent of you Contributions (Contributions, events, represe	not including f	sents what und raising			%
41) Capital Campa	ign				
Are you planning to or endowment with				ion to fund ex	pansion
○ yes					
J yes					

36) What is your school's primary method of Internet access?

0	nc
	H

42) If "yes" please indicate:

- O You will conduct the campaign yourselves
- O You will hire professional consultants

43) Please rate your level of economic concern using the scale below:

	no concern	mild concern	moderate concern	strong concern
Tuition affordability	•	0	•	•
Declining enrollment	•	0	•	•
Enrollment recruitment	•	0	0	0
Staffing issues	0	0	0	O
Escalating cost of operations	0	0	0	0

44)	Have you had to implement any of the following measures this year? (c	heck all
that	t apply)	

☐ staff reduction
□ salary reduction
■ budget restructuring
☐ course or program reduction
□ campus closure

45) Enrollment

Current year's enrollment	
Previous year's enrollment	
Enrollment capacity	

46) Percent of students for whom English is not their first language:

- O 0-5%
- O 6-10%
- O 11-25%
- **O** 26–49%
- 50% or more

47) Retention Rates (K-12 only)

Illustration:

Student retention from previous year

A = 08-09 enrollment, excluding graduating students (e.g. 120 enrolled, minus 20

1/2 day FIVE DAY Pre-School \$per month	10)	30 students from 08–09 re-enrolled in 09–
(i.e., percent of last year's students who reenrolled). Staff retention from previous year (i.e., percent of last year's staff who are still at the school). 48) Please indicate the percent of your 12th grade graduates going on to college going on to Christian colleges	Divide B (09–10 re-enrolled, 80) by A (08-	–09 enrollment, 100) = .80 or 80%
(i.e., percent of last year's students who reenrolled). Staff retention from previous year (i.e., percent of last year's staff who are still at the school). 48) Please indicate the percent of your 12th grade graduates going on to college going on to Christian colleges		
Staff retention from previous year (i.e., percent of last year's staff who are still at the school). 48) Please indicate the percent of your 12th grade graduates going on to college going on to Christian colleges 49) Do you maintain contact with your graduate alumni? yes no 50) Tuition and Fees Percent of increase or decrease in tuition rates from last year: (Average tuition and all fees). Enter a negative % if they decreased. Illustration: If your tuition and fees were \$1,000 and they increased to \$1,100, enter 10% If your tuition and fees were \$1,000 and they decreased to \$900, enter -10% If they remained the same, enter 0 % 51) Tuition and Fees Pre-School Please indicate the monthly rate(s) appropriate for your pre-school. Answer in whole dollars only 1/2 day TWO DAY Pre-School per month 1/2 day THREE DAY Pre-School per month 1/2 day FIVE DAY Pre-School per month 1/2 day FIVE DAY Pre-School per month	(i.e., percent of last year's students who	
going on to College going on to Christian colleges	Staff retention from previous year (i.e., percent of last year's staff who are	
going on to Christian colleges 49) Do you maintain contact with your graduate alumni? yes	48) Please indicate the percent of your 12	2th grade graduates
49) Do you maintain contact with your graduate alumni? yes		
yes no no no no no no no n	going on to Christian colleges	%
Tuition and Fees Percent of increase or decrease in tuition rates from last year: (Average tuition and all fees). Enter a negative % if they decreased. Illustration: If your tuition and fees were \$1,000 and they increased to \$1,100, enter 10% If your tuition and fees were \$1,000 and they decreased to \$900, enter -10% If they remained the same, enter 0 **Tuition and Fees** Pre-School Please indicate the monthly rate(s) appropriate for your pre-school. Answer in whole dollars only 1/2 day TWO DAY Pre-School 1/2 day THREE DAY Pre-School per month 1/2 day FIVE DAY Pre-School per month 1/2 day FIVE DAY Pre-School per month 1/2 day FIVE DAY Pre-School per month	49) Do you maintain contact with your gr	aduate alumni?
Percent of increase or decrease in tuition rates from last year: (Average tuition and all fees). Enter a negative % if they decreased. Illustration: If your tuition and fees were \$1,000 and they increased to \$1,100, enter 10% If your tuition and fees were \$1,000 and they decreased to \$900, enter -10% If they remained the same, enter 0 ** ** ** ** ** ** ** ** **	•	
(Average tuition and all fees). Enter a negative % if they decreased. Illustration: If your tuition and fees were \$1,000 and they increased to \$1,100, enter 10% If your tuition and fees were \$1,000 and they decreased to \$900, enter -10% If they remained the same, enter 0	50) Tuition and Fees	
If your tuition and fees were \$1,000 and they increased to \$1,100, enter 10% If your tuition and fees were \$1,000 and they decreased to \$900, enter -10% If they remained the same, enter 0	(Average tuition and all fees).	rates from last year:
Pre-School Please indicate the monthly rate(s) appropriate for your pre-school. Answer in whole dollars only 1/2 day TWO DAY Pre-School 1/2 day THREE DAY Pre-School 1/2 day FIVE DAY Pre-School 5 5 7 7 8 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	If your tuition and fees were \$1,000 and t If your tuition and fees were \$1,000 and t	they decreased to \$900, enter -10%
Pre-School Please indicate the monthly rate(s) appropriate for your pre-school. Answer in whole dollars only 1/2 day TWO DAY Pre-School 1/2 day THREE DAY Pre-School 1/2 day FIVE DAY Pre-School per month per month per month		
Please indicate the monthly rate(s) appropriate for your pre-school. Answer in whole dollars only 1/2 day TWO DAY Pre-School \$ per month 1/2 day THREE DAY Pre-School \$ per month 1/2 day FIVE DAY Pre-School \$ per month	51) Tuition and Fees	
Answer in whole dollars only 1/2 day TWO DAY Pre-School \$ per month 1/2 day THREE DAY Pre-School \$ per month 1/2 day FIVE DAY Pre-School \$ per month	Pre-School	
1/2 dayTHREE DAYPre-Schoolper month1/2 dayFIVE DAYPre-Schoolper month		priate for your pre-school.
1/2 dayTHREE DAYPre-Schoolper month1/2 dayFIVE DAYPre-Schoolper month	1/2 day TWO DAY Pre-School	\$ ner month
	1/2 day THREE DAY Pre-School	\$per month
LILL CON LIAM LIAM DECEMBER CONTRACTOR CONTR		
	Full day TWO DAY Pre-School Full day THREE DAY Pre-School	\$per month \$per month

52) Please indicate the tuition rates for the grade levels you offer.

Kindergarten

Annual Tuition and Fees

Combined cost per child First child FULL YEAR, not monthly in U.S. Dollars (\$USD)

Half-day Kindergarten

- O n/a
- O less than \$1,500
- **>** \$1,500–\$1,999
- **>** \$2,000–\$2,499
- **>** \$2,500–\$2,999
- **3,000+**

53) Full-day Kindergarten (FULL YEAR, \$USD)

- O n/a
- less than \$2,500
- **>** \$2,500–\$2,999
- **>** \$3,000–\$3,499
- **3** \$3,500–\$3,999
- **>** \$4,000+

54) Elementary grades 1–6 (FULL YEAR, \$USD):

- O n/a
- O less than \$2,500
- **>** \$2,500–\$2,999
- **3** \$3,000–\$3,499
- **3** \$3,500–\$3,999
- \$4,000-\$4,499\$4,500-\$4,999
- **3** \$5,000–\$5,999
- **3** \$6,000–\$6,999
- **3** \$7,000–\$7,999
- **>** \$8,000+

55) Middle School/Jr. High 6-8, or 7-8 (FULL YEAR, \$USD):

 n/a less that \$2,500- \$3,000- \$4,000- \$5,000- \$6,000- \$7,000- \$8,000+ 	\$2,999 \$3,499 \$3,999 \$4,999 \$5,999 \$6,999 \$7,999
56) High School 9–12 (FULL YEAR,	\$USD):
 n/a less that \$3,000- \$3,500- \$4,000- \$5,000- \$6,000- \$7,000- \$8,000- \$10,000 \$12,000 \$14,000 \$16,000 	\$3,499 \$3,999 \$4,999 \$5,999 \$6,999 \$7,999 \$9,999 \$0-\$11,999 \$0-\$13,999 \$0-\$15,999
57) Salaries a	and Wages
School Administ	trators: All Levels (Pre-School, Elementary, and Secondary)
Are administrator s	salaries based on a schedule?
o no o yes	
58) Do you offer n	nerit pay for administrators?
O no O yes	
59) Administrat Elementary and Se	
Exclude benefits. Annual amounts or	nly, full-time equivalent, \$USD.

Top Administrator, K-12

(Superintendent, Principal, Headmaster, Director)

	Salary Range					
	not applicable	less than \$30,000	\$30,000- \$49,999	\$50,000- \$69,999	\$70,000- \$89,999	\$90,000+
0–7 years experience	•	•	•	•	•	•
8–15 years experience	•	•	•	•	•	0
16 or more years experience	•	0	0	0	0	0
Top Administrator	•	0	•	•	•	0

60) Elementary School Administrator

			Salary	Range		
	not applicable	less than \$30,000	\$30,000– \$49,999	\$50,000- \$69,999	\$70,000– \$89,999	\$90,000+
0–7 years experience	•	0	0	•	0	0
8–15 years experience	•	0	•	•	0	0
16 or more years experience	0	0	0	0	0	0
Top Administrator	•	•	•	•	•	•

61) Middle School Administrator

		Salary Range							
	not applicable	less than \$30,000	\$30,000- \$49,999	\$50,000- \$69,999	\$70,000- \$89,999	\$90,000+			
0–7 years experience	•	0	0	0	0	0			
8–15 years experience	•	0	0	0	0	0			
16 or more years experience	•	0	0	0	0	0			
Top Administrator	Ö	0	0	0	0	0			

62) High School Administrator

		Salary Range							
	not applicable	less than \$30,000	\$30,000– \$49,999	\$50,000- \$69,999	\$70,000- \$89,999	\$90,000+			
0–7 years experience	0	•	0	•	0	0			
8–15 years experience	0	•	0	•	0	0			
16 or more years experience	•	•	•	0	•	0			
Top Administrator	•	•	0	•	•	•			

63) K-12 Teachers

Are	teacher	salaries	based	on a	schedule?	

O	no
O	ves

64) Do you offer merit pay for teachers?

0	no
0	ves

65) Annual Teacher Salaries, K-12

Note, Pre-school teachers are reported separately, below.

Annual amounts, excluding benefits, full-time or full-time equivalent only, \$USD

	n/a	less than \$20,000	\$20,000- \$24,999	\$25,000- \$29,999	\$30,000- \$39,999	\$40,000- \$59,999	\$60,000+
K-12 teacher 0-9 years experience with BA	0	0	•	0	0	0	0
K-12 teacher 10 or more years experience with BA	0	0	•	O	0	O	0
K-12	O	•	O	O	O	C	O

teacher 0–9 years experience with MA							
K-12 teacher 10 or more years experience with MA or higher degree	0	0	0	0	0	0	0
K–12 teacher Highest teacher salary	O	0	0	0	0	0	O

66) Teacher's Aid/Assistant Salaries

What is your average teacher's aid/assistant salary? (full-time salary, excluding benefits, \$USD)

- O not applicable
- O less than \$15,000
- O \$15,000-\$19,999
- **>** \$20,000–\$24,999
- **>** \$25,000–\$29,999
- **3** \$30,000–\$34,999
- **>** \$35,000+

67) All Schools: Secretarial Wages

Preschool, Elementary and Secondary

Secretarial hourly wages, \$USD

	< \$10.00/hr	\$10.00– 12.49/hr	\$12.50- \$14.99/hr	\$15.00– \$19.99/hr	\$20.00/hr or more
Starting Secretary	0	•	•	•	0
Highest Paid Secretary	0	0	0	0	0

68) Pre-School

Director

Education level of your Preschool Director

- O not applicable
- CDA or Beginning level
- O degree, up to, but not including, Bachelor's degree
- O Bachelor's Degree
- O Master's Degree
- O Master's Degree+
- O Doctorate

69) Pre-School Director Salaries

Annual amounts, full-time or full-time equivalent only, \$USD

	not applicable	less than \$30,000	\$ 30,000- \$49,999	\$50,000– \$69,999	\$70,000– \$89,999	\$90,000+
0–7 years experience	0	0	0	•	•	•
8–15 years experience	0	0	0	0	0	0
16 or more years experience	0	0	0	0	0	0
Top Preschool Administrator	•	0	•	•	•	0

70) Pre-School teacher salaries

Annual Amounts, excluding benefits, \$USD Full-time teachers or full-time equivalent only

	not applicable	less than \$15,000	\$15,000- \$19,999	\$20,000- \$24,999	\$25,000- \$29,999	\$30,000- \$34,999	\$35,000+
0–9 years experience CDA or no degree	•	0	0	0	0	0	O
0–9 years experience 2 year degree	0	0	0	0	0	0	0
0–9 years experience BA degree	0	0	0	0	0	0	0
0–9 years experience MA or higher degree	•	0	•	0	•	0	O

10+ years experience CDA or no degree	0	0	0	•	•	0	•
10+ years experience 2 year degree	0	•	•	O	0	0	•
10+ years experience BA degree	•	•	•	•	0	•	•
10+ years experience MA or higher degree	0	0	0	•	•	0	O
Highest Preschool salary	0	0	•	•	•	0	•

71) Benefits

Please indicate which of the following benefits you provide for your employees.

Sick leave?

O none

O 10 days or less

O more than 10 days

72) Which of the following do you provide?

	no	yes
Full Coverage Health Insurance	0	O
Partial Coverage Health Insurance	0	•
Graduate School Tuition	•	0
Personal Days	0	O
Funding for professional development	•	•

73) Tuition discount for staff children

what percent do you discount tuition	or starr crimaren:
 0% (no discount) 1–24% discount 25–49% discount 50–74% discount 75–99% discount 100% discount 	
74) Do any of the above benefits diffe	r for faculty vs. administration?
O 72	
O no O yes	
75) Retirement for Administrators	
What percent of Administrator's pay d retirement?	oes the school contribute to his/her
 0% (none) less than 3% 3%-4.9% 5%-6.9% 7%+ 	
76) Retirement for Faculty	
What percent of a Faculty Member's paretirement?	ay does the school contribute to his/her
 0% (none) less than 3% 3%-4.9% 5%-6.9% 7%+ 	
77) Missions	
Has your school ever sent its own sho	t-term mission teams domestic or abroad?
O yes O no	
78) How many overseas mission team	s do you typically send per year?
One team per yearMultiple teams per yearNumber and years vary	
79) What organization has hosted the	majority of your mission trips?

O	Most or	all t	through ACSI
0	Most or	all	set up by yourselves
0	Most or	all t	through other organizations

80) What grade levels were represented in your mission teams? (Check all that apply)

High School
Middle School/Junior High
Elementary

81) **ACSI Services**

Rate the usefulness, to you, of various ACSI services.

If you do not use a service, or have no opinion, please leave the answer blank.

	not useful	not very useful	somewhat useful	very useful
School Improvement	•	•	•	•
Professional Development	0	•	•	O
Professional Publications	•	•	0	•
Support Services	•	•	0	•
Student Activities	•	•	•	•
Legal Legislative Services	0	0	0	O

82) Rate the usefulness, to you, of ACSI Professional Magazines.

If you do not use a service, or have no opinion, please leave the answer blank.

	not useful	not very useful	somewhat useful	very useful
Christian School Education	0	O	0	•
Christian Early Education	•	•	•	•
The Meantime (Urban school publication)	•	•	0	O
World Report	0	O	O	0

Legal				
Legislative	O	•	•	O
Update				

83) Rate the usefulness, to you, of ACSI Electronic Publications.

If you do not use a service, or have no opinion, please leave the answer blank.

	not useful	not very useful	somewhat useful	very useful
ACSI Prayer Guide	•	•	•	0
Regional eNews	0	O	0	0
K.I.D. Time	O	O	0	0
Christian School Comment	•	•	•	0
From My Heart to Yours	•	•	•	0
Math by Design	O	O	O	O
National Notes	0	O	0	O
The Shield	0	O	0	O

8

84)	Textbook Review Process
This	s year your school will review: (check all that apply)
	 □ Bible □ Math □ Science □ Spelling □ Preschool □ Language Arts □ Foreign Language □ Social Studies □ Fine Arts □ Physical Education/Health
85)	Standardized Assessment
You	r school administers the following: (check all that apply)
	 □ Stanford Achievement Test (SAT) □ Iowa Test of Basic Skills (ITBS) □ California Achievement Test (CAT) □ Comprehensive Test of Basic Skills (CTBS) □ TerraNova Multiple Assessments □ Bracken Concept Scale

☐ Bracken Concept Scale, Revised

	□ Other
86) Is	your school interested in reviewing more economical norm referenced tests?
	O yes
	O no
	ou came to the survey via email invite, ow your email address as: %q211%.
or if you	rame to the survey by some other path, I would like your personal access to the results of the school survey sent to a It email address,
please (enter it here:

Appendix C

Permission to use data from the ACSI 2009-10 Annual School Survey





Enabling Christian Educators and Schools

Worldwide

June 27, 2011

To Whom It May Concern,

RE: 2009-10 Annual School Survey Data from ACSI

This letter validates that Christopher "Adam" Clagg has requested and has been granted permission by the Association to use the data from our 2009-10 Annual School Survey for his doctoral research study. This data is compiled from ACSI member schools and is produced by Development Testing Services. The compiled data accurately reflects the ACSI member schools who participated in this survey.

Sincerely.

Taylor Smith, Jr.

Senior Vice President, ACSI USA

Appendix D

IRB Approval Letter



The Graduate School at Liberty University

June 14, 2011

Christopher Adam Clagg
IRB Exemption 1129.061411: A Correlational Study Examining the Institutional and Faculty
Characteristics of ACSI Schools that Produced National Merit Scholarship Semifinalists in 2010

Dear Christopher,

The Liberty University Institutional Review Board has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and that no further IRB oversight is required unless your data collection extends past the one year approval granted by this memo, in which case you would submit the annual review form attached to your approval email.

Your study falls under exemption category 46.101 (b)(4), which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46:

(4) Research involving the collection or study of existing data, documents, records, pathological specimens, or diagnostic specimens, if these sources are publicly available or if the information is recorded by the investigator in such a manner that subjects cannot be identified, directly or through identifiers linked to the subjects.

Please note that this exemption only applies to your current research application, and that any changes to your protocol must be reported to the Liberty IRB for verification of continued exemption status. You may report these changes by submitting a new application to the IRB and referencing the above IRB Exemption number.

If you have any questions about this exemption, or need assistance in determining whether possible changes to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,

Fernando Garzon, Psy.D. IRB Chair, Associate Professor

Center for Counseling & Family Studies

(434) 592-5054

LIBERTY.

40 Years of Training Champions for Christ: 1971-2011

APPENDIX E

Mann-Whitney Tests of Schools

Comparison of Selected Variables Based on Whether the School had at Least One NMS Semifinalist. Mann-Whitney Tests (N = 682)

Variable	Group	n	M	SD	$r_{\rm s}$	z	p
Number of Faculty					.25	6.61	.001
	No	626	24.63	23.04			
	Yes	56	48.25	30.24			
Percent of Teachers with Graduate Degrees					.15	3.88	.001
C	No	626	24.89	17.33			
	Yes	56	32.61	14.61			
Operating Budget (in thousands)					.27	7.06	.001
,	No	626	1,930.67	2,246.73			
	Yes	56	5,079.00	5,116.77			
Computers for Students					.19	5.03	.001
-	No	626	56.53	114.12			
	Yes	56	132.73	183.68			
Enrollment					.26	6.79	.001
	No	626	306.60	315.04			
	Yes	56	610.32	410.69			
Number of Computers per 100 Students					.06	1.45	.15
	No	626	21.93	18.62			
	Yes	56	20.41	18.34			
Number of Students per Faculty Member					.09	2.37	.02
•	No	626	13.82	19.74			
	Yes	56	14.63	11.64			

Appendix E displays the Mann-Whitney test comparisons for selected variables based on whether the school had at least one NMS semifinalist. The Mann-Whitney tests were used instead of the more common t tests for independent means because the size of the sample for the non-NMS schools was 11 times larger than for the NMS schools (n = 626 versus n = 56). Inspection of the table found NMS scores had significantly: more

faculty (p = .001); higher percentages of teachers with graduate degrees (p = .001); higher operating budgets (p = .001); more computers for students (p = .001); more enrollment (p = .001); and a higher number of students per faculty member (p = .02).