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School Size and Its Effect on School Climate and Academic Achievement in Rural South Georgia High Schools

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SCHOOL SIZE AND ITS EFFECT ON SCHOOL CLIMATE AND ACADEMIC

ACHIEVEMENT IN RURAL SOUTH GEORGIA HIGH SCHOOLS

by

JAMES BENJAMIN LAWHORN

(Under the Direction of Teri Denlea Melton)

ABSTRACT

While leaders in rural South Georgia have continued to debate the notion of

school size as it applies to high schools, limited research was available to support staying

small or continued growth through consolidation. In this study, schools from rural South

Georgia were examined in order to collect data that could provide communities with the

resources available to either advocate for large or small rural high schools. Moreover, it

could also provide the rationalization necessary for some larger schools to split. The

purpose was to establish the relationship between school size and academic achievement,

and the relationship was between school size and school climate.

For the study, a quantitative ex post facto research design was used to determine

what, if any relationships existed between academic achievement, school climate, and

school size. All data regarding academic achievement, school size, and socioeconomic

status were matters of public record and were collected through various online sources. In

order to establish school climate, high school teachers in three of the prescribed schools

examined were asked to complete a survey.

In this study, the academic achievement means of the last three testing

administrations of the mathematics Georgia High School Graduation Test (GHSGT) were

compared between three groups of 40 high schools whereby each school was assigned to

a particular group as a result of that school's enrollment. Moreover, these means were adjusted using wealth as an established covariate for each of the examined schools. Significant mean differences and adjusted mean differences were found between small schools and medium schools. Additionally, significant mean differences and adjusted mean differences were found between small schools and large schools.

School climate was examined in one small school, one medium school, and one large school through the administration of a survey. Of the schools examined, small schools demonstrated the highest school climate followed by medium then large schools respectively.

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DEDICATION

This dissertation is dedicated to my mother and father who have continued to give me and my brothers every opportunity to succeed. At a very early age, they both instilled in us the value of hard work through demonstration. Although I know at times it has been difficult for them both, I could not have asked for better parents, and I am truly grateful. In all, the example they have provided has been and will continue to be paramount in any success that I might have or experience. Thank you both very much for the continued encouragement and support.

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CHAPTER I

INTRODUCTION

In the era of school reform, countless variables have been explored as researchers hope to find ways in which they might be able to improve schools. On most occasions, a school's effectiveness has been generalized by its ability to either meet certain criteria or their possession of specific characteristics. Two of the aforementioned characteristics consistently evaluated in schools have been academic achievement through the administration of standardized tests and school climate (Bard et al., 2006; Rumberger & Palardy, 2005; Stewart, 2008; Werblow & Duesbery, 2009). Successful schools have been normally differentiated as those schools with above average standardized test scores and a positive school climate. Subsequently, it has become important to explore the relationship of academic achievement, school climate and certain extraneous variables that have the potential to influence these indicators of successful schools. In recent decades, an extraneous variable in education that has begun to be popularly explored has been school size.

Although the number of students has increased in the last 100 years, the number of public schools across the United States has fallen by more than 70% (Wasley, 2002; Werblow & Duesbery, 2009). Rural school consolidation has resulted in the closure of more than 114,000 one-room schools (Noll, 2001). Consolidation and closure of these smaller rural schools has resulted in enrollments that have been increased by 400% (Gardner, Ritblatt, & Beatty, 2000). High schools have been hit especially hard by the consolidation movement. Today, rural school enrollment has increased to more than six times what it was just 50 years ago (Lawrence et al., 2002). Proponents of larger schools

touted several positive outcomes of rural school consolidation as justification in the wake of increased enrollment and school closures. These outcomes included lower costs and improvements in both services and curricular offerings; however, savings have not always proved to be substantial and increased services more often than not were proven disproportionate (Bard et al., 2006; Berry & West, 2005; Duke & Trautvetter, 2001; Gentry, 2000; Pittman & Haughwout, 1987; Shepherd, 2004).

Although increasing school size and enrollment began as a means by which school efficiency could be improved, the enormity with which it has been applied has been some cause for concern (Brimley & Garfield, 2002). Over the past 20 years, a movement has begun to either lower enrollment in high schools or to create schools within schools. This movement was the result of the belief by some educational theorists that educational quality has become diminished in larger high schools (Evans, 2007). Some argue that while smaller schools offer a more focused curriculum, their potential for smaller class sizes, personalization, and socialization have helped to continue to make small schools superior. Moreover, these smaller schools have also traditionally been more viable organizations as they have been less susceptible to the administrative pitfalls beholden to large bureaucratic organizations (Boss, 2000; Howley & Bickel, 2002).

More than 30 years ago, Rutter, Maughan, Mortimore, and Ouston (1979) established a link between positive school climate and improved academic achievement. Others have sought to expound on that research. Lee and Bryk (1989) found an association between an orderly and safe school climate and the equitable academic achievement between White and African American students. Additionally, Rumberger and Palardy (2005) reported the negative impact of classroom disruptions on the safe

setting and subsequent student learning within schools (Stewart, 2008). Although some research does establish an association between a positive school climate and improved student outcomes, this research often fails to consider the possibility that a relationship could exist between school climate and school size (Rutter et al., 1979; Lee & Bryk, 1989; Stewart, 2008). While rural high schools indubitably vary in size across the Nation and especially the Southeast, limited research was available to support that a particular size fosters positive school climate or better academic achievement. The reality of continued school growth has existed as a result of changes in demographic trends, population, and continued consolidation; therefore, school leaders must determine the extent to which this growth has affected academic achievement and school climate in order to most appropriately meet the educational needs of our students.

Problem Statement

The average school district has risen in size exponentially from 127 students to 653 since 1940 as reported by the United States Department of Education (2000). Also, the average school enrollment has continued to increase during this time period. High school enrollment has become especially problematic in recent years as the existence of high schools with large enrollments has become commonplace and smaller high schools have become rare. Large schools have generally been considered to be more financially cost effective. However, while larger schools were believed to be capable of having the resources necessary to provide their students with a more comprehensive curriculum, in rural areas, where the consolidation movement has been most aptly applied, limited research was available to illustrate an association between increased enrollment and other aspects of school and organizational effectiveness. While research does establish that a

modest increase in school size correlates to some positive returns, the relationship between increased enrollment, academic achievement, and school climate remained unclear. The intent of this study was to determine if school climate and academic achievement in rural South Georgia high schools were correlated with school size.

Purpose

The purpose of this study was to determine what the relationship was between school size and academic achievement in rural high schools of South Georgia, and what the relationship was between school size and school climate in the rural high schools of South Georgia. Large rural secondary schools were defined as those high schools classified by the Georgia High School Association (GHSA) as AAA, AAAA, and AAAAA. These schools had as many as 2,932 students and as few as 1,131 students. Medium schools were defined as those schools that were classified AA. These schools had as many as 1,004 students and as few as 579 students. Small schools were defined as those rural South Georgia schools that were classified as A. These schools had as many as 578 students and as few as 325 students (Georgia High School Association, 2009; National Center for Education Statistics, 2010). The independent variable for this study was school size in rural secondary schools in the South Georgia regional area. The dependent variables were academic achievement and school climate. Academic achievement was measured by using the results for first time test takers in these rural secondary schools administration of Georgia High School Graduation Test (GHSGT) in mathematics. School climate was measured in these schools through the use of an established school climate survey. As socioeconomic status (SES) has the potential to influence many school factors, it was necessary to control for SES in this study in order

to eliminate the impact that SES could have had on academic achievement in the examined schools.

The overarching research questions that guided this study were as follows:

R_1: What is the relationship between the size of student population in rural secondary schools of South Georgia and academic achievement as measured by the mathematics portion of the Georgia High School Graduation Test while controlling for socio-economic status?

R_2: What is the relationship between the size of the student population in rural secondary schools of South Georgia and school climate as measured by a portion of the Teacher Opinion Inventory used in the accreditation process by the Southern Association of Colleges and Schools?

Significance of the Study

In the past 100 years, the rural school consolidation movement has led to increasing enrollment in rural schools across the country despite the fact that communities have fought to maintain their identity through the viability of these rural schools. The financial burden of keeping smaller schools open has ultimately led to the consolidation movement (Bard et al., 2006). Although research has supported some advantages to consolidation, limited information was available to establish what effect consolidation has had on academic achievement and school climate in rural schools. The proposed study was such that any meaningful results would indubitably be of value to organizational and district administrators in rural South Georgia. If a link could be established between school size and academic achievement, or school size and school

climate in rural school, practitioners could begin to use this information in strategic planning as systems debate the issue of further consolidation.

Procedures

The relationship between school size and academic achievement, and the relationship between school size and school climate in rural high schools across South Georgia were examined in this study. Academic achievement was considered in all A, AA, AAA, AAAA, and AAAAA high schools located in the Okefenokee, First District, and Heart of Georgia Regional Education Service Agencies (RESA) excluding those schools in Chatham County and Glynn County. Chatham County and Glynn County were excluded from this study because the population in these two districts exceeds 125 persons per square mile and, therefore, could not have been considered rural. In all, 40 high schools were examined in 34 school districts across South Georgia. Academic achievement was measured using the results from the mathematics portion of the Georgia High School Graduation Test (GHSGT) in these high schools. The data needed for analysis relating to school size and academic achievement was obtained from the Georgia Public Education Report Card compiled each year by the Georgia Department of Education and posted on the Governor's Office of Student Achievement (GOSA) website. In order to establish school climate, all teachers from one school in each category were asked to complete 12 items designed to measure school climate and environment for learning. These 12 items were part of the Opinion Inventory used by the Southern Association of Colleges and Schools (SACS) for accreditation of schools in the Southeastern region of the United States. Reliability for these items has been reported at a Cronbach's alpha coefficient of .92. Content validity has been established through a

review of literature on high-performing schools (Validity and Reliability of AdvancED Surveys, 2007).

As it was the intent of this study to examine relationships, it was necessary to adopt a quantitative approach to the research methods utilized. Statistically significant relationships between a nominal independent variable and multiple quantitative dependent variables were necessary; therefore, the ex post-facto quantitative design was implemented. Statistically significant relationships between high school size and academic achievement were examined in addition to relationships between school size and school climate. The researcher attempted to control for socio-economic status (SES) by establishing multiple covariates when comparing the mean academic achievement scores from the three groups. The covariates used for this study included: the percentage of students in each school that qualify for free and reduced lunch and the school's current wealth ranking as established by the Georgia Department of Education. The data from the study were analyzed using the Statistical Analysis Package for the Social Scientist (SPSS). Three independent groups were analyzed in this study. Large, medium, and small high schools were examined. An analysis of covariance was needed in order to compare the three distinct groups in academic achievement while controlling for SES. SES was not a factor in the review of school climate between the three schools because degrees of freedom between respondents in this portion of the study did not exist.

Definition of Terms

Georgia High School Graduation Tests (GHSGT) – GHSGTs are the minimum

competency exams that all high school students must pass in order to graduate.

The exam is administered to all eleventh grade high school students, and it is

designed to measure minimum competency in writing, English/language arts, mathematics, science, and social studies. For the purposes of this study, only the results of the mathematics GHSGT were examined.

Rural High Schools – For the purposes of this study, rural high schools were limited to the schools in areas where the population density was less than 125 persons per square mile as determined by the United States Census Bureau (2010). All publically funded high schools in the First District, Heart of Georgia, and Okefenokee Regional Service Educational Agencies (RESA) were considered. The aforementioned RESAs focused the study on schools within the following South Georgia school districts: Appling County, Bleckley County, Bryan County, Brantley County, Bulloch County, Camden County, Candler County, Charlton County, Coffee County, Dodge County, Dublin City, Effingham County, Evans County, Jeff Davis County, Laurens County, Liberty County, Long County, McIntosh County, Montgomery County, Pierce County, Pulaski County, Screven County, Tattnall County, Telfair County, Toombs County, Treutlen County, Vidalia City, Ware County, Wayne County, Wheeler County, and Wilcox County.

School Size – School size was delineated according to the classification system established by the Georgia High School Association (GHSA). This system was based on the enrollment numbers within high schools. In all, there are five classifications: A, AA, AAA, AAAA, and AAAAA. In order to ensure that only the most rural areas of these districts were considered, the study was limited to the high schools in counties with fewer than 125 persons per square mile. In these areas, there were typically a higher concentration of A and AA schools. For the

purposes of this study, all A schools were considered small and AA schools was delineated medium, while AAA, AAAA, and AAAAA schools were large schools.

School Climate – School climate was defined as the extent to which the high schools examined offer a safe and orderly environment for learning with school facilities adequate to meet the needs of students as observed by the teachers within these schools (Cohen et al., 2009). The teachers in the schools being considered will be asked to complete a portion of the Teacher Opinion Inventory developed by the Southern Association's Colleges and Schools (SACS) in order to provide the data necessary to make generalizations regarding the climate within their school.

Limitations and Delimitations

As with all research, certain limitations and delimitations existed in this study. Participating high schools were limited to the rural high schools of South Georgia. As the study used the mathematics portion of the Georgia High School Graduation Test (GHSGT) as a means to gauge academic achievement, it presupposed that the GHSGT provided a true representation of academic achievement among high school students in Georgia. School climate was measured by an instrument utilized by the Southern Association of Colleges and Schools (SACS) designed to capture individual opinions concerning the learning environment within schools; it was assumed that this instrument accurately measures school climate. Respondents were delimited to the teachers from one small, one medium, and one large high school; therefore, it is possible that the results may be limited in their ability to represent the school climate in all small, medium, and large high schools of rural South Georgia.

Chapter Summary

While leaders in rural South Georgia have continued to debate the notion of school size as it applies to high schools, limited research was available to support staying small or continued growth through consolidation. In this study, schools from rural South Georgia were examined in order to collect data that could provide communities with the resources available to either advocate for large or small rural high schools. Moreover, it could also provide the rationalization necessary for some larger schools to split. The purpose was to establish what the relationship was between school size and academic achievement, and what the relationship was between school size and school climate. Academic achievement and school climate in all A, AA, AAA, AAAA, AAAAA schools in the Heart of Georgia, First District, and Okefenokee Regional Educational Service Agencies were examined with the results from an investigation of multiple variables analyzed using the Statistical Package for the Social Sciences (SPSS).

CHAPTER II

REVIEW OF LITERATURE

In the last century, school enrollments have steadily increased as a result of several factors. One of the most influential factors affecting enrollment during this time was the rural school consolidation movement that began more than 100 years ago. The exponential growth of high schools in rural America is due in large part to this movement. With fewer small and moderate size schools remaining, researchers have sought to identify the advantages and disadvantages of schools of varying size. The purpose of this section was to provide a comprehensive review of the related literature to school size, academic achievement, and school climate in rural Georgia high schools. Specific aspects of the aforementioned variables were reviewed in the literature in order to present the theoretical perspective and rationale by which the proposed study could be conducted.

Rural School Consolidation

Following the birth of the Nation more than 200 years ago, citizens began to consider how they would educate the populace. Subsequent to their creation, schools in urban areas were immediately perceived to be more comprehensive as a result of the resources the people in these areas could provide. The educational opportunities for students in rural districts differed as these students usually attended one-room schools (Peoples, 2008). In the late 19th century, the organizational influences of the Industrial Revolution would preempt changes in the structure of rural schools. In order to make rural schools more efficient, it was deemed necessary to consolidate many of these one-room schools (Peoples, 2008). The push to consolidate these smaller rural schools would

continue into the 20th century. Many, including noted educator Ellwood Cubberley, supported this notion (Shepherd, 2004). Cubberley (1922) argued the consolidation of rural schools would provide the people within these communities with the opportunity to transition from an agricultural to industrial society. Through the consolidation of rural schools in rural communities, resources could be more effectively utilized providing students with exposure to trained educators. Additionally, the aforementioned consolidation was thought to provide the diverse population in rural communities with an opportunity at gaining critical knowledge of scientific concepts through a more effective administration of school resources (Cubberley, 1922).

Even with a century-old effort to consolidate smaller schools in rural communities, many rural schools remained relatively small at the turn of the 20th century. Prior to WWII, nearly 75% of secondary schools nationwide had an enrollment of 200 or less while just 14% of high schools had an enrollment of more than 500 students and only 7% had more than 1,000 students (Hampel, 2002). This trend would begin to dramatically change in the 1950's with the emergence of education theorist James Conant (Shepherd, 2004). According to Conant (1959), it was unlikely that a small rural school could provide a comprehensive instructional program due to the cost of this program and the inability of the poorer residents of these communities to pay this cost. Experts agreed that organizational techniques adapted from industry were necessary in order to create an optimal social, philosophical, and academic order in education (Conant, 1959; Cubberley, 1922). According to Bard, Gardener, and Wieland (2006), the consolidation of rural schools was seen as an opportunity to increase the economic benefits within these schools. Rural schools were ultimately deemed deficient in comparison to the larger

schools in urban areas because it simply was not cost effective to provide great curricular offerings in these smaller schools (Bard et al., 2006; Contant, 1959).

Despite the push towards consolidation, rural schools fought to stay viable throughout the second half of the 20th century; however, economic conditions in rural communities made it increasingly difficult to do so.

A series of economic downturns in rural areas contributed further to the emphasis on school consolidation. Rural economic decline during the decade of 1970-1980 created more migration toward jobs in urban areas… As a result, rural public school enrollment declined and the cost of educating rural students started to rise. Declining enrollments and increased costs resulted in a financial crisis for many rural school districts. In order to save teacher jobs and maintain quality curricula, some school districts began voluntarily consolidating programs and facilities. (Bard et al., 2006, p. 41)

Rural communities sought to hold onto their identity and maintain the educational system in these regions, but the financial burden was often too cumbersome. As a result, many were forced to accept the mantra of consolidation albeit against their will (Bard et al., 2006). Consequently, schools have continued to increase in size over the previous several decades, and although rural schools were much larger than at any time in American educational history, doubts about the status quo regarding this issue have emerged. According to the literature, instructional and institutional gains can not necessarily be met by closing small schools and opening larger schools (Shepherd, 2004). Moreover, evidence also suggested that per pupil expenditures were not necessarily reduced through consolidation (Bard et al., 2006).

School Size

As public schools and school systems have ventured to expand over the previous century, the debate on school size and its relationship to organizational performance has ensued (Leithwood & Jantzi, 2007). Experts have often disagreed on an accepted optimal size for schools; however, most have accepted the existence of a link between organizational size and organizational effectiveness in schools (Jones, 2003; Lee & Smith, 1997). While the existence of this link has been successfully established, the extent to which school size effects organizational effectiveness has frequently been unclear. Research conducted by Lee and Smith suggested that the ideal secondary school size was between 600 and 900 students. Dissenting views concluded that secondary schools should only have between 400 and 500 students in order to optimize effectiveness (Shepherd, 2004). Although the research has ultimately been inconclusive, the body of work has established a means by which generalities can be made regarding school size (Leithwood & Jantzi, 2007; Shepherd, 2004). Aspects of organizational effectiveness can now be predicted about schools considered to be both large and small. Advocates of both large and small schools continue to debate the issue while citing communities that have benefited from consolidation and those that have suffered as a result of losing a local high school (Jones, 2003; Shepherd, 2004).

Large High Schools

Demographic trends and political pressure preceded the trend to consolidate schools. Consequently, high schools across the nation have continued to grow larger. The United States Department of Education (2000) reported that "since 1940 the size of the average U.S. school district has risen from 217 to 2,627 [students], and the average

school has risen from 127 to 653 [students]" (as cited in Lawrence et al., 2002, p. 13).

Today, one in ten high schools has an enrollment that exceeds 1,500 (Brimley &

Garfield, 2002; Shepherd, 2004). According to Lawrence et al., the problem of high

school growth has become exceedingly pronounced in some states. "In California and

Florida, for example, the average high school has more than 1,400 students; six other

states average over 1,000; and five others average over 900 per high school" (Lawrence

et al., 2002, p. 13). The trend has become so commonplace that 61% of parents no longer

consider 1,500 students to be too large (Public Agenda, 2002).

Proponents for consolidation have maintained that efficiency was exclusive to

larger organizations (Slate & Jones, 2005). Early research supported the Economies of

Scale theory and its ability to produce favorable outcomes in larger schools. McGuffey

and Brown (1978) found that higher facility utilization was characteristic in large

schools; therefore, these schools experienced lower operational costs. Borrowing from

the Economies of Scale corporate concept, educators and policy makers in support of

consolidation reasoned that comprehensive curricular offerings can be made through the

construction of larger schools and closure of small, outdated schools (Duke &

Trautvetter, 2001; Shepherd, 2004; Viadero, 2001). Moreover, the closure of these

schools has also been justified by pundits who tout the potential opportunities of

advanced level courses and specialized services for students with special needs in larger

consolidated schools (Shepherd, 2004). Although some research has documented the

financial advantages of fewer administrative personnel and lower maintenance costs in

larger schools, detractors noted an existing inflation within this system (Gentry, 2000).

While Contant (1959) urged smaller schools to consolidate in an effort to make schools

more cost effective on a per pupil basis, continued growth through consolidation has made larger schools prone to hidden costs (Cox, 2002; Lawrence et al., 2002). In rural areas with large schools, some of these hidden expenditures have included: higher transportation expenses, elevated administrative overhead, and increased spending on maintenance and security (Lawrence et al., 2002; Shepherd, 2004).

The concept of consolidation of rural schools has been supported by the notion that larger schools are more capable of offering a greater assortment of courses, special needs services, specialized programs, and vocational offerings (Duke & Trauvetter, 2001; Gentry, 2000; Shepherd, 2004). According to Lee and Smith (1997), larger schools have the enrollment to support resources because the students within the school have similar needs; however, some do not agree that curricular comprehensiveness has been guaranteed in larger consolidated schools (Fowler & Walberg, 1991). Pittman and Haughwout (1987) found that while curricular offerings did increase with increased enrollment, these offerings were generally not proportionate. In a study of consolidated schools across the nation, they reported that a 100% enrollment increase produced a modest 17% yield in curricular offerings.

As a result of the failure of large schools to provide the comprehensive curriculum suggested, others have asserted that academic offerings in these schools also suffer. According to Stiefel, Berne, Iataroloa, and Frutcher (2000), schools of more than 1,500 students result in inferior outputs including: lower academic achievement, decreased attendance rates, and diminished graduation or dropout rates. Howley and Bickel (2002) explained the failure of these schools to perform academically by demonstrating the disproportionally of socially disadvantaged students in schools of

distinct size. Due to the fact that research supports the problematic nature of learning environments when enrolling large numbers of minorities and low socioeconomic status (SES) students, experts agree that a decline in academic achievement can be expected in some instances as enrollment of high minorities and low SES are often strong indicators of decreased student outcomes (Bickel, Howley, Williams, & Glascock, 2001; Lee & Smith, 1997; Shepherd, 2004).

Small High Schools

As a result of the release of Conant's (1959) research regarding the size of high schools, small schools across rural America began to consolidate. At that time, Americans viewed consolidation as the cure to the Nation's educational woes. After years of continued research, those disagreeing with the assertion that bigger is better have begun to suggest lower enrollments in high schools as critical to the improvement of the Nation's educational system (Hampel, 2002; Shepherd, 2004). Moreover, studies have been conducted that indicated improved student performance in smaller schools (Abbott et al., 2002). Most small-scale schooling initiatives have been initiated in the rural communities where the majority of small public high schools still exist (Public Agenda, 2002). In these communities, small quality schools were perceived to be an invaluable community asset as these schools often boast smaller teacher per pupil ratios. Additionally, smaller schools also provide rural communities with a much needed identity (Monk, 2007). Subsequently, parents and educators have been somewhat receptive to this movement (Johnson, 2002; Shepherd, 2004).

In the study of the relationship between dropout rates and school size, Pittman and Haughwout (1987) discovered that for schools with more than 600 students, the dropout

rate increased as the school size increased. Attendance was also negatively affected by consolidation. Researchers concurred that daily school attendance rates were consistently higher in smaller schools (Fowler & Walberg, 1991; Slate & Jones, 2005). Teacher and student satisfaction also had a negative relationship with large schools. Researchers suggested that this could be the result of the negative school climate that has been often associated with larger schools (Slate & Jones, 2005). Smaller rural schools also had fewer discipline problems. Research has found that as schools increased as a result of consolidation, discipline problems correspondingly increased (Slate & Jones, 2005). Student participation in voluntary activities within these schools also decreased. Barker and Gump (1964) found that students were more likely to participate in school-related activities in small schools. Moreover, research also suggested that parental involvement was also greater in smaller schools because parents often felt more comfortable approaching smaller schools (Slate & Jones, 2005).

The movement to consolidate schools was one that began as a result of the Economies of Scale theory. This theory purported the belief that a large organization could be run more economically and efficiently than multiple smaller organizations (Duke & Trauvetter, 2001; Lee & Smith, 1997). Although this theory has gained much support in business, it does not necessarily apply to schools. Today, many supporters of small schools have refuted this theory (Werblow & Duesbery, 2009). Additionally, the debate has also ensued supporting curricular offerings in small schools. Small schools have often been forced to offer a focused curriculum; however, strategies have now been implemented in many schools in order to expand options for the students of these schools (Howley & Bickel, 2002; Shepherd, 2004). According to Boss (2000), scheduling in

small schools has become flexible. The following strategies have been included in many

instances: interdisciplinary courses, innovative scheduling, distance learning, video-

conferences, multiage grouping, cooperative learning, and other technological

applications. In recent years, smaller schools have been required to carefully construct

curriculums in order to ensure the needs of their students have been addressed. Smaller

schools generally tend to have smaller classes sizes. Consequently, research has

suggested that the architects of curriculums in these schools have often made concessions

in curricular goals enabling students to reap the benefits of smaller class sizes. Benefits of

smaller class sizes include both individualized and meaningful instruction (Boss, 2000;

Shepherd, 2004).

The consolidation of schools movement was generally espoused by the notion that

tax dollars could be saved through the elimination of smaller schools; however, there has

been a movement in recent years to revert back to small schools in order to eliminate

higher operating costs (Monk, 2007). Advocates of small schools have found support for

their assertion that small schools can be operated cheaper than large schools (Shepherd,

2004). Lunenburg and Orstein (1999) refuted the economy of scale theory as it applies to

schools by stating, "emphasis will be placed on smaller schools because they are cheaper

than larger schools. Small schools usually not only mean more efficient use of space but

also fewer administrators, which results in lower cost" (p. 373). Several studies have also

been conducted supporting increased levels of academic achievement in smaller schools.

According to Lee and Smith (1997), learning gains appeared to be greater in the moderate

to small sized schools. Evidence existed to suggest that students have been more engaged

in small schools. Consequently, dropout rates declined and the graduation rate improved

(Abbott et al., 2002; Shepherd, 2004). Howley and Bickel (2002) maintained that a correlation exists between small schools and achievement when all circumstances were equal.

Academic Achievement

With enrollment increasing by more than 400% while the number of public schools has decreased by 70%, the question of how school size effects academic achievement looms large (Werblow & Duesbery, 2009). According to Werblow and Duesbery, "a five year evaluation of the Bill and Melinda Gates Foundation's High School Initiative found that smaller schools in three out of four districts did not lead to increased academic achievement on standardized language arts or mathematics assessments" (p. 15). Therefore, it is possible that smaller school size does not necessarily improve school academic achievement even though it has been associated with such positive student outcomes as improved attendance and decreased drop-out rates (Pittman & Haughwout, 1987; Shear, 2008; Werblow & Duesbery, 2009). In larger schools, some literature suggested academic achievement was improved by greater school size; however, this data was often limited to those schools that were able to increase per pupil expenditures through increased school size. In other words, large schools were only able to successfully improve academic achievement when their size made it possible for them to increase the amount of money that they were spending on each student (Werblow & Duesbery, 2009).

In the most current research conducted regarding the relationship between high school size and academic achievement, Werblow and Duesbery (2009) concluded that a curvilinear relationship existed between school size and academic achievement. School

size could be used to predict greater academic gains in high schools that were on the extreme ends of the spectrum. Schools in the bottom 20% and in the top 20% with regard to size typically demonstrated greater gains than those schools in the middle 60%. However, a direct relationship between school size and the drop-out rate in extremely large schools existed as well; as schools increased in size, the drop-out rate also increased (Werblow & Duesbery, 2009).

School Climate

According to the National School Climate Council, there are four major factors that shape school climate: safety, relationships, teaching and learning, and the institutional environment (Cohen, Pickeral, & McCloskey, 2009). In order to improve schools, a coordinated, sustained, and intentional effort must be made to improve these areas in order to promote the social, emotional, ethical, and intellectual abilities of students. Cohen et al. maintained that "students who feel safe, connected, and engaged in school are more likely to learn well." Consequently, it is paramount that institutional leaders use available climate data associated with the four aforementioned factors in order to promote the meaningful staff, family, and student engagement necessary to develop the social, emotional, civic, and intellectual skills necessary for success in both school and life (Cohen et al., 2009).

Research has suggested the possibility of a negative correlation between positive school climate and large schools. In other words, school climate decreased as school enrollment increased (Fowler & Walberg, 1991; Pittman & Haughwout, 1987). Schools with greater enrollments also have had fewer opportunities for students to experience leadership positions. Moreover, the average level of participation in extracurricular

activities has often been lower as well (Cox, 2002; Fowler & Walberg, 1991). Student isolationism, alienation, mistrust of the faculty and staff were often by-products of large schools. In the opinion of Lunenburg and Orstein (1999):

> A school is too large when a loss of personal or school identity among students occurs and when students are unable to fully participate in social and athletic activities or have difficulty interacting among themselves or feel they do not belong to the student body or school in general. There is a sense of aimlessness, isolation, or even despair among a large number of students which in turn causes other social and psychological problems (such as delinquency, drugs, and cults) which are more overt in nature. (p. 364)

According to Brimley and Garfield (2002), Congress recognized these concerns and took steps to address them in 2000. In that year, 45 million dollars were appropriated to help create programs and promote changes in secondary schools that would make these schools more intimate for the attending students. Limited research was available to support the notion that smaller schools succeed in improving school climate; however, large schools have been repudiated for instances of increased drop rates, higher incidents of violence, and diminished accountability when compared to their counterparts in smaller schools (Lawrence, 2005).

School climate has also been positively impacted by the small school setting, according to research. As a result of the small size of schools, students were able to develop and maintain positive social relationships. Moreover, these students also considered themselves to be a member of the community and the school they attended (Abbott et al., 2002; Gentry, 2000; Lawrence, 2005). Experts suggested the school

community was fostered by the fact that decisions impacting learning, governance, and diversity were addressed on an intimate level (Lawrence, 2005). Small school advocates also believed that the learning environment needed to be intimate and personal to stakeholders in order for these stakeholders to be motivated to ensure the organization succeeded (Johnson, 2002). Moreover, the personal nature of these organizations also fostered safety and security within small schools as small schools reported fewer incidents of vandalism, violence, and disruptive behavior (Abbott et al.; Boss, 2000).

Chapter Summary

The review of literature indicated much about the rationale by which rural schools initially begun to consolidate (Bard et al., 2006; Abbott et al., 2002). The consolidation movement began in rural areas as a result of the Economies of Scale movement. Contant (1959) asserted that instructional and institutional resources would continue to be inadequate in smaller schools because it was not cost effective to provide such resources to a great number of schools serving a small population. Although many rural communities identified with these smaller schools, economic hardships would force the people in these areas to consider consolidation (Bard et al., 2006).

As consolidation and school size have evolved, several aspects of schools both large and small have been brought to the forefront of the debate. Large schools were initially considered in rural areas because they were believed to be cost effective; however, these schools have not always conclusively proven to be cheaper (Slate & Jones, 2005). While large schools did report lower operational costs in many instances, it was also noted that a point existed whereby these schools did incur diminishing economic returns. The complexity of the issue has continued to be clouded by the fact that

increased curricular offerings have historically been vastly disproportionate to increased

school enrollment (Slate & Jones, 2005). Different studies on school size have ultimately

produced different results; however, these results have not been necessarily contradictory

(Slate & Jones, 2005). Very large schools and very small schools reflected poor school

quality in the research. Slate and Jones (2005) suggested that there was a curvilinear

relationship between school size and school effectiveness. Therefore, "the range in which

increased school size has a beneficial effect on both expenditures and educational

outcomes" (p. 12) must be considered for each school independent of any optimal

number, as research has shown that an optimal number did not exist.

CHAPTER III

METHODOLOGY

The number of public schools in the United States has fallen nearly 70% since 1940 while school enrollment has steadily increased over this same time period (U.S. Department of Education, 2000; Werblow & Duesbery, 2009). The fall in the number and the rise in enrollment of America's public schools were due in large part to rural school consolidation in the last century (Peoples, 2008). Although this movement was felt in rural South Georgia to some extent, a number of rural schools with small enrollments still existed. The purpose of this study was to examine schools of a specific size in rural South Georgia in order to determine if a relationship existed between academic achievement when size was the chief consideration, and school climate when size was the chief consideration. This chapter included the research questions for this study, a description of the research design, the participants of the study, sampling procedures, instrumentation, procedures used for data collection, expected respondent rate, and the method in which the data was reported.

Research Questions

The overarching research questions that guided this study were as follows:

R_1: What is the relationship between the size of the student population in rural secondary schools of South Georgia and academic achievement as measured by the mathematics portion of the Georgia High School Graduation Test while controlling for socio-economic status?

R_2: What is the relationship between the size of the student population in rural secondary schools of South Georgia and the school climate as measured by a

portion of the Teacher Opinion Inventory used in the accreditation process by the Southern Association of Colleges and Schools?

Research Design

In order to investigate the relationship between school size and academic achievement and the relationship between school size and school climate, a quantitative ex post-facto research design was used. According to Sprinthall (2006), ex post-facto research is needed when the independent variable (IV) has been assigned rather than manipulated. School size was something already established in the examined schools. Therefore, a quantitative ex post-facto research design made it possible to rank each school utilizing its Georgia High School Association classification designating schools into distinct groups as a result of the school's current enrollment. Quantitative data collected from schools within these groups were collected, analyzed, and compared among the three ranked groups. The Governor's Office of Achievement (GOSA) was the chief outlet used to pull data regarding each school's performance on the mathematics portion of the Georgia High School Graduation Test (GHSGT). Additionally, scores received from three examined schools regarding climate were also utilized. These scores were obtained from the administration of a school climate survey to teachers at a small, medium, and large high school. Size and logistical convenience were the chief considerations in the selection of these schools. Teachers at an A, AA, and AAA school were asked to complete a 12-item survey. Scores from the survey ranged from 1 to 5 with scores closer to 5 indicative of a positive school climate. Anecdotal data from the National Center for Education Statistics and the Georgia Department of Education were

included in the study in order to mitigate the possibility that socio-economic status influenced the academic achievement results.

Sample and Sampling

For this study, schools from all high schools in the First District, Heart of Georgia, and Okefenokee Regional Education Support Agencies (RESA) were examined excluding those high schools in Chatham County and Glynn County. In the metropolitan areas of Savannah in Chatham County and Brunswick in Glynn County, the population density exceeds 125 persons per square mile; therefore, these locations could not be reasonably considered rural. In all, academic achievement for 40 high schools was considered including: 13 class A high schools; 16 class AA high schools; and 11 class AAA, AAAA, AAAAA high schools (see Appendix A). School climate was only considered at three of these 40 schools. Proximity and availability were the chief considerations in the selection of these schools.

The high schools that were used in this study were chosen based on their regional location, proximity to one another, and the population per square mile in the surrounding area. In order to ensure that each of the schools included was rural, data from the United States Department of the Census Bureau (2010) was used to determine which schools should be excluded due to excessive population density. The 40 high schools meeting the following criteria were included in the academic achievement portion of the study: schools located in South Georgia in the Heart of Georgia, First District, or Okefenokee Regional Support Agencies (RESA); schools not located in a county whereby a population of more than 125 persons per square mile existed; schools that were members of the Georgia High School Athletic Association (GHSA). Schools not within the

prescribed RESAs, private high schools, schools with no affiliation to the GHSA, and schools in counties with metropolitan population concentrations were excluded from consideration in this study.

Teachers from three high schools within the prescribed three examined Regional Educational Support Agencies were selected for participation in the study as well. The teachers were asked to complete a survey as part of the study. In order to protect the anonymity of the respondents, the survey was administered and collected by a school aid (see Appendix B).

<p align="center">**Instrumentation**</p>

School climate was measured in this study using a 12-item opinion inventory (see Appendix B). This instrument has been used by the Southern Association of Colleges and Schools to capture an individual's perception about the climate within desired schools. Reliability for these 12 items has been reported at a Cronbach's alpha coefficient of .92. Validity has been established through a review of literature on high-performing schools (Validity and Reliability of AdvancED Surveys, 2007).

<p align="center">**Data Collection**</p>

Academic Achievement

Data regarding each school's academic performance on the mathematics portions of the Georgia High School Graduation Test (GHSGT) were collected from the Governor's Office of Student Achievement (GOSA) report card at the http://www.gaosa.org/ website. The school's Georgia High School Association (GHSA) classification was found at the following website: http://www.ghsa.net. The National Center for Educational Statistics (http://nces.ed.gov/) was used to locate data relating to

the high school enrollment numbers, free and reduced lunch percentage, and other demographic data. The wealth scores for the districts examined in this study were provided by the Georgia Department of Education (http://www.doe.k12.ga.us/).

The study utilized data from the 2009, 2008, and 2007 spring administration of the GHSGT in mathematics. The GHSGT has been administered to high school juniors in five content areas: writing, English/language arts, mathematics, science, and social studies. In order to receive a high school diploma from any public high school in the State of Georgia, students must score a minimum of 500 in each prescribed area. Students not achieving minimum competency were offered the opportunity to remediate and retest; however, only the scores of students that take and pass the exam in their first attempt were included in the percentages reported by the GOSA. It was important to study the results of three test administrations rather than one in order to reduce contaminants and provide the researcher with an accurate representation of each high school with regard to academic achievement.

The GHSGT became the required exit exam for all high school students in 1991 when the state legislature passed Georgia law O.C.G.A. section 20-2-281 (Georgia Department of Education, 2010). Students have since been required to take and pass this exam in the aforementioned content areas in accordance with this legislation. The GHSGT is designed to measure each student's mastery of the Georgia Performance Standards (Georgia Department of Education).

School Climate

The 12-item inventory was transposed and forwarded to the three cooperating schools. In order to rank the data according to the predetermined categories, the

researcher included one question regarding the school's Georgia High School Association classification. The researcher aimed for a respondent rate of no less than 50% in each school. In order for that number to be reached, surveys were administered at a meeting requiring the attendance of all faculty.

Responses by teachers on the school climate survey were assigned a numeric value 1-5. The scores from each item were added together and divided by the total in order to establish a mean school climate score for each institution. As with each item on the analysis, a super mean was calculated for each institution so that scores ranged from 1-5 with scores close to 1 indicating a negative school climate and scores close 5 indicating a positive school climate.

Data Analysis

A one-way analysis of covariance (ANCOVA) was needed to compare mean group differences of a single dependent variable after removing one or more statistical covariates (Tabachnick & Fidell, 2006). In the proposed study, the researcher compared the mean group differences of large, medium, and small rural Georgia high schools as defined by the Georgia High School Association on the mathematics portion of the Georgia High School Graduation Test while removing one established indicators of socio-economic status which was a combination of the system wealth score and the free and reduced lunch percentage. The percentage of students on free and reduced lunch and the wealth score of the system to which each school belonged to served as the statistical indicator of socio-economic status in this report. Additionally, the researcher compared mean group differences of a large, medium, and small high school in rural Georgia on an opinion inventory used by the Southern Association of Colleges and Schools in order to

establish school climate. The Statistical Package for the Social Sciences was used to calculate mean scores and perform the one-way ANCOVA in the case of academic achievement.

An analysis of covariance (ANCOVA) was performed using the Statistical Package for the Social Sciences in order to analyze the academic achievement data. For the purposes of this study, ANCOVA was the most appropriate means of data analysis considering that quantitative data was examined among three pre-determined categorical groups while controlling for an established covariate. The three categorical groups remained small, medium, and large high schools in rural South Georgia. Quantitative data was used to establish the dependent variables, academic achievement and school climate. Additionally, quantitative data was used as the researcher established the covariate, socio-economic status, in order to adjust mean academic achievement scores between the three measured groups.

Reporting the Data

All data collected in the proposed study is reported in Chapter IV. Charts and tables are used in order to graphically display all data. Data are displayed by research question. Conclusions are drawn and researcher recommendations made regarding the findings. All conclusions considered as possible answers to the developed research questions are included in Chapter V.

Chapter Summary

For the proposed study, a quantitative ex post facto research design was used to determine what, if any relationships existed between academic achievement, school climate, and school size. The ex post facto research design allowed the researcher to

utilize pre-established categories of size in order to make generalizations about academic achievement and school climate in rural South Georgia high schools. The research followed a quantitative ex post facto research design because it was not necessary to manipulate the independent variable in this study in order to establish the relationship of high school size in rural Southern Georgia to the dependent variables.

All data regarding academic achievement, school size, and socioeconomic status were matters of public record and were collected through various online sources. In order to establish school climate, high school teachers in three of the prescribed schools examined were asked to complete a short survey. The survey was distributed and collected by a school aid while protecting the anonymity of all respondents and institutions. After all data were collected and analyzed, the researcher examined statistical results in order to determine what relationships existed between the measured variables.

CHAPTER IV

REPORT OF DATA AND DATA ANALYSIS

The purpose of this study was to determine if a relationship existed between school and academic achievement in rural South Georgia high schools. Additionally, it was the intent of the researcher to determine if school size affected school climate in rural South Georgia High schools. The following research questions guided the research study:

R_1: What is the relationship between the size of the student population in rural secondary schools of South Georgia and academic achievement as measured by the mathematics portion of the Georgia High School Graduation Test while controlling for socio-economic status?

R_2: What is the relationship between the size of the student population in rural secondary schools of South Georgia and the school climate as measured by a portion of the Teacher Opinion Inventory used in the accreditation process by the Southern Association of Colleges and Schools?

Research Design

An empirical research study was conducted on public high schools in rural South Georgia. As it was the intent of the researcher to determine the relationship between school size and academic achievement in schools of a particular geographical region in Georgia, the basis for school selection in this study was location. A quantitative ex post facto research design was implemented in order gather information about academic achievement in schools of a particular size in a specific region of Georgia. Information regarding academic achievement was collected on 40 different public schools in three different Regional Educational Support Agencies in South Georgia. School climate data

were collected on three of the 40 schools with differences in size in order to determine the attitudes of the faculty with regard to safety, relationships, teaching and learning, and the institutional environment.

Respondents

Academic Achievement

The demographics from the schools where academic achievement was examined are detailed in Appendix A. The chief participants were all schools in the First District, Heart of Georgia, and Okefenokee Regional Educational Support Agencies (RESA). Each school was located in the Southeastern region of the state of Georgia and they were separated into three distinct groups according to Georgia High School Association (GHSA) classification.

Small Schools.

All schools with a GHSA classification of A were considered small schools for the purposes of this study. The enrollment of the largest class A school was 579 students. The smallest school had an enrollment of 325 students. The average enrollment for GHSA class A schools in this study was 476. In all, 13 schools fell into this classification. These schools had an average free and reduced lunch enrollment of 241 students or 51%. The average wealth ranking for the schools in this category was 129 with the consideration that there were 180 total school districts in the state of Georgia.

Medium Schools.

Schools with the GHSA classification of AA were considered medium schools. The enrollment of the largest AA school examined in this study was 1004 students and the smallest GHSA class AA school had 579 students. The average enrollment for all AA

schools was 821 students. There were 15 total schools within the examined RESAs that fell into this category. These schools had an average free and reduced lunch enrollment of 371 or 45%. The average wealth score for schools within this category was 126 of 180 total school districts.

Large Schools.

In this study, large schools were those schools with a GHSA classification of AAA, AAAA, or AAAAA. The enrollment of the smallest school in this subgroup was 1131 students and the largest school had an enrollment of 2,932 students. The average enrollment for large schools was 1611 students. In all, 11 schools in this subgroup were examined. These schools had an average free and reduced lunch enrollment of 478 students or 30%. The average wealth ranking for large schools examined in this study was 121 of 180 school districts.

School Climate

For school climate, the researcher chose to narrow the study to three schools. Teachers from one small, medium, and large high school within the First District, Heart of Georgia, and Okefenokee Regional Educational Support Agencies (RESA) were chosen to participate. The schools differ drastically in enrollment. As a result, a different number of teachers were polled in each school. The schools selected to participate in the school climate survey are profiled in Table 4.1. Numbers regarding the teacher totals were first ascertained using the National Center for Educational Statistics (http://nces.ed.gov/). These exact numbers were later verified and amended by school administration.

The small school where school climate was examined had an enrollment of 519 students. Twenty-one teachers serve these 519 students. Of these 21 teachers, 13 participated in the study establishing a respondent rate of 62%. The medium school where the school climate survey was administered had 705 students. Fifty-five teachers were employed at this school. Twenty-eight of these teachers participated in the study establishing a respondent rate of 51% for medium schools. The class AAA school examined had an enrollment of 1,131 students and 67 teachers. Fifty-two of these teachers completed and returned the school climate survey establishing a respondent rate of 78% for large schools.

Table 4.1: Profile of the High School Climate Survey Participants

	GHSA Class	Enrollment	Teachers	Participating Teachers	Respondent Percentage
Small	A	519	21	13	62%
Medium	AA	705	55	28	51%
Large	AAA	1131	67	52	78%

Findings

Academic Achievement

In all, 13 sets of scores on the mathematics portion of the Georgia High School Graduation Test (GHSGT) were evaluated for small schools, 16 sets of scores were evaluated for medium schools, and 11 sets of scores were evaluated for large schools. Individual results for each school were compiled and enumerated in Appendix A. Inferential statistics for all schools were complied and included in Table 4.2.

Table 4.2: Findings from the Mathematics GHSGT Among Examined Schools

	Mean	Standard Deviation	Maximum	Minimum	Covariate
Small	.9031	.03084	.921	.889	.6131
Medium	.9321	.02911	.947	.919	.5778
Large	.9424	.03203	.957	.921	.4868

Small schools passed the mathematics portion of the GHSGT on average at 90% over the three examined years with a standard deviation of 3.1%. The students in the school with the highest pass rate met standards on this exam 92% of the time over the three examined years. The school with the lowest rate of students meeting the minimum score in small schools did so at a rate of 89%. When free and reduced lunch percentages were combined with wealth scores for the small schools, an established covariate of 61% was determined for small schools.

Medium schools passed the GHSGT at 93% on average between the years of 2007 through 2009. The standard deviation for this calculation was 2.9%. The school with the lowest pass rate on the mathematics exam over this period passed this exam at a 95% rate. The school in this subgroup with the lowest percentage passed the mathematics portion of the GHSGT at 92%. Combining free or reduced lunch percentages with system wealth scores yielded a wealth covariate of 58%.

When academic achievement was examined in large schools using the results from the mathematics GHSGT, students from these schools passed the exam on average at 94% with a standard deviation of 3.2%. The large school that passed with the highest passing percentage on the GHSGT over this three year period passed the exam at a rate of 96%. The school with the lowest passing percentage on this exam passed at 92%. A wealth covariate for large schools was calculated at 49% when combining free or reduced lunch percentages with system wealth scores.

School Climate

Respondents for the survey in this study were asked to answer 12 questions whereby they were prompted to indicate how they felt about various aspects regarding

their school's climate. Results from those responses were displayed below in Table 4.3.

Mean scores were calculated for the 13 participants from the small school, 28 participants

from the medium school, and 52 participants from the large high school. Mean scores for

the small school on this survey were calculated at 3.83 with a standard deviation of .545.

Average scores from these 13 participants ranged from 2.50 to 4.50. Mean scores from

participants at the medium school were calculated at 3.33 with a standard deviation of

.648. Average scores for these 28 participants ranged from 2.33 to 4.67. When teachers

from large schools were surveyed, their mean results were calculated at 3.07 with a

standard deviation of .691. The 52 large school average scores on this survey ranged from

1.92 to 4.75.

Table 4.3: Findings for the School Climate Survey Among Participating Schools

	Mean	Standard Deviation	Participants	Minimum	Maximum	Range	Median
Small	3.8285	.54468	13	2.50	4.50	2.00	3.8600
Medium	3.3279	.64753	28	2.33	4.67	2.34	3.1700
Large	3.0679	.69099	52	1.92	4.75	2.83	3.0000

Data Analysis

In the conducted study, the researcher intended to determine if a relationship

existed between school size and academic achievement when controlling for socio-

economic status. Additionally, it was the intent of the researcher to determine if a

relationship existed between school size and school climate. In order to make these

determinations, the researcher attempted to conduct an analysis of covariance

(ANCOVA) using an ex post facto research design in order to compare the adjusted

academic achievement quantitative means of groups ranked into three categories

according to size while controlling for the quantitative covariate of socio-economic

status. Adjusted means for socio-economic status were not calculated for school climate

as the necessary degrees of freedom between participants in each location were not

present with regard to the covariate.

School Size and Academic Achievement

A one-way analysis of covariance (ANCOVA) was conducted for this study. The

independent variable, school size in the rural high schools of South Georgia, included

three levels: small schools, medium schools, and large schools. The dependent variable in

this portion of the study was academic achievement as measured by calculating mean

scores for each high school in the examined Regional Educational Support Agencies

(RESA) on the Georgia High School Graduation Test (GHSGT) over the last three years.

The covariate in the study was socio-economic status as calculated by combining each

school's wealth score with that school's free and reduced lunch percentage. When the

relationship between the covariate and the dependent variable was analyzed through

homogeneity-of-regression as a function of the independent variable, the underlying

assumption of homogeneity of variance was met as $F(2,37) = .809$ and $p(.453) > \alpha(.01)$.

Adjusted means and mean differences for the resulting one-way ANCOVA are reported

below in Table 4.4.

*Table 4.4: Pairwise Comparisons of GHSGT Mathematics Scores by School Size*

	Mean	Adjusted Mean	Adjusted Mean Differences		
			1.	2.	3.
1. Small Schools	.903	.905	--		
2. Medium Schools	.932	.933	.028*	--	
3. Large Schools	.942	.939	.034*	.006	--

*p<.05

Significant results for the analysis were found for adjusted mean differences

between the scores reported in large and small schools at the .05 level with an F-ratio of

3.27 and a p-value of .0496. Additionally, mean differences for medium and small

schools were also found to be significant at the .05 level with an F-ratio of 3.27 and a p-value of .0496. The introduction of wealth as the covariate did narrow the gap in academic achievement between the small, medium, and large schools. After the introduction of the covariate, the mean scores for small schools and medium schools increased, while large school mean scores decreased. Overall, students tested on the GHSGT in mathematics passed the exam at a significantly higher rates in the medium (M=93%) and large schools (M=94%) than they did in small schools (M=91%) after adjusting for wealth as the covariate. Therefore, academic achievement remains higher in schools with larger enrollments when wealth has been controlled for and eliminated as a confounding variable. This relationship is illustrated in Figure 4.1.

Figure 4.1: Findings for Academic Achievement Among Participating Schools
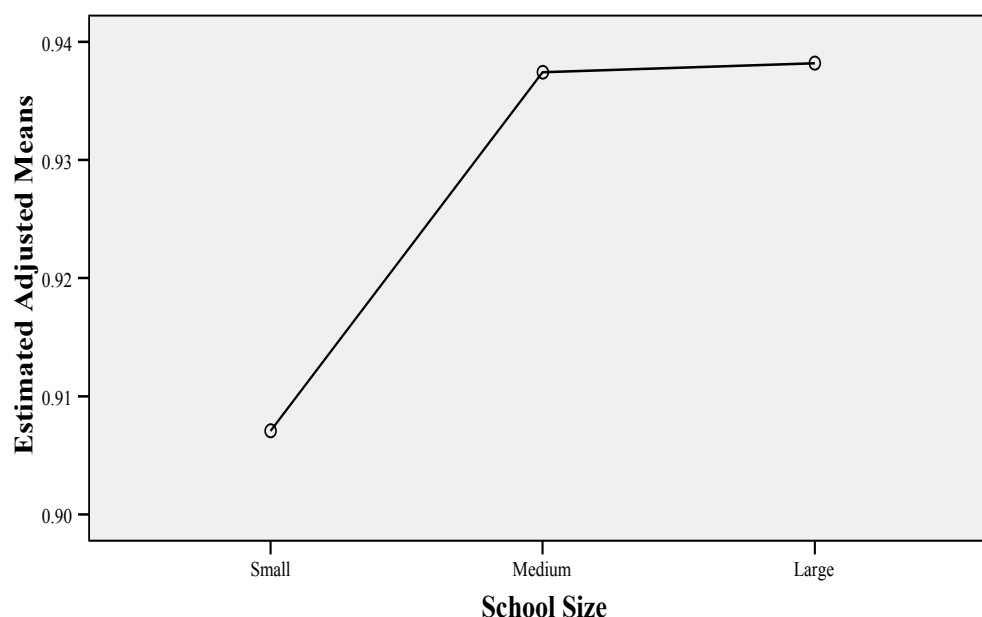
School Size and School Climate

It was initially the intent of the researcher to conduct a one-way analysis of covariance (ANCOVA) for this portion of the study as well. The independent variable, school size in the rural high schools of South Georgia, included three levels: small

schools, medium schools, and large schools. The dependent variable in this portion of the study was school climate as measured by calculating mean scores for respondents from a single small school, medium school, and large school in the examined Regional Educational Support Agencies (RESA) on a school climate survey. The covariate in the study remained socio-economic status as calculated by combining each school's wealth score with the school's free and reduced lunch percentage; however, considering the fact that respondents on all levels were from the same schools with the same wealth score, zero degrees of freedom existed between the participants with regard to wealth as the covariate. Consequently, the researcher was unable to determine if a relationship existed between the covariate and the dependent variable. As a result, smaller schools experience a more positive school climate than medium and large schools.

Chapter Summary

In this study, the academic achievement means of the last three testing administrations of the mathematics Georgia High School Graduation Test (GHSGT) were compared between three groups of 40 high schools whereby each school was assigned to a particular group as a result of that school's enrollment. Moreover, these means were adjusted using wealth as an established covariate for each of the examined schools. Significant mean differences and adjusted mean differences were found between small schools and medium schools. Additionally, significant mean differences and adjusted mean differences were found between small schools and large schools.

School climate was examined in one small school, one medium school, and one large school through the administration of a survey. Potential respondents included all teachers in the selected schools with a desired respondent rate of no less than 50%. The

examined small school had a respondent rate of 62%. The examined medium school had

a respondent rate of 51%. The examined large school had a respondent rate of 78%.

Findings for the administration of this survey resulted in the following mean scores:

small = 3.83, medium = 3.34, and large = 3.07. All scores on the administered survey

ranged from 1 to 5 with the larger scores indicating a more positive school climate. Of

the schools examined, small schools demonstrated the highest school climate followed by

medium then large schools respectively.

CHAPTER V

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

This chapter was used to summarize the research study. A summary of the

research project, an analysis of research findings, a discussion of research findings,

conclusions, implications, and recommendations were included**.**

Summary

The purpose of this study was to examine schools of a specific size in rural South

Georgia in order to determine if a relationship exists between academic achievement and

school climate when size was the chief consideration. The research questions were:

R_1: What is the relationship between the size of the student population in rural

secondary schools of South Georgia and academic achievement as measured by the

mathematics portion of the Georgia High School Graduation Test while controlling for

socio-economic status?

R_2: What is the relationship between the size of the student population in rural

secondary schools of South Georgia and the school climate as measured by a portion of

the Teacher Opinion Inventory used in the accreditation process by the Southern

Association of Colleges and Schools?

A quantitative ex post facto research design was used to compare the academic

achievement and school climate among schools in a particular geographic region of a

particular size. Academic achievement scores were collected for 40 schools through

public sources. These scores included all spring testing administrations of the Georgia

High School Graduation Test (GHSGT) for the past three school years. School climate

data were collected by administering a school climate survey to one school in each of the following subgroups: small, medium, and large.

Mean scores in academic achievement and school climate were calculated and compared between subgroups for schools designated to participate in the study. Adjusted mean scores were calculated for academic achievement establishing wealth as the covariate and using an analysis of covariance (ANCOVA) for statistical computation. Each response on the school climate survey measured quantitatively and ranged from 1 to 5. A sum of these scores was calculated for all respondents and questions. This sum was divided by that same total in order to create a super mean score for each designated subgroup.

Analysis of Research Findings

After reviewing the results from the data analysis conducted in this study, three major findings emerged. The three major findings that resulted regarding academic achievement and school climate among high schools of varying sizes in rural South Georgia were: (1) students in large and medium schools produce significantly higher academic achievement results when compared with small schools; (2) students in small schools perform better and students in medium and large schools perform poorer when wealth is controlled for; and (3) small schools experience a more positive school climate than medium and large schools.

Discussion of Research Findings

The research findings in this study were contradictory in some instances and consistent in others when compared to the findings of other researchers throughout the literature. Although limited information regarding academic achievement and school

climate were present in the literature when considering size in rural secondary schools, the literature did address the relationship between academic achievement, school climate, and school size to an extent. The following sub-sections were used discuss the guiding research questions in the study, major research findings with regard to these questions, and how these findings compare to what has already been identified throughout the literature.

Academic Achievement

The guiding research question for this study with regard to academic achievement was: What was the relationship between the size of the student population in rural secondary schools of South Georgia and academic achievement as measured by the mathematics portion of the Georgia High School Graduation Test while controlling for socio-economic status? The major findings in this study with regard to academic achievement were: (1) students in large and medium schools produce significantly higher academic achievement results when compared with small schools; and, (2) controlling for wealth in the examined schools narrows the gap in academic achievement between the students in large schools and medium schools and the students in small schools.

Improving academic achievement has continued to be one of the most important goals of educators and school administrators. For some time, theorists have debated whether or not reducing school enrollments in high schools could improve academic achievement and the resulting research has continued to produce conflicting results (Pittman & Haughwout, 1987; Shear, 2008; Werblow & Duesbery, 2009). The findings from this study with regard to academic achievement seemed to continue to confound the

literature with the exception of the ability of wealth to narrow the achievement gap between large and small schools.

In an evaluation of the Bill and Melinda Gates Foundation's High School Initiative, it was reported that smaller schools in 4 out of 5 districts did not lead to increased academic achievement on standardized assessments (Werblow & Duesbery, 2009). However, a study by Stiefel et al. (2000) reported lower academic achievement in secondary schools with more than 1,500 students. Furthermore, Howley (1996) ascertained that academic achievement was better in small schools than in large schools when controlling for certain circumstances including wealth. While the results from this study somewhat supported the findings reported by Howley (1996) in that they showed that controlling for wealth lowered the achievement gap between schools of differing size, the findings with regards to academic achievement and its relationship to school size differed from the results reported by Howley (1996) and Stiefel et al. (2000) as this study demonstrated that an increase in school size correlated to increased academic achievement.

Although most research results regarding school size and academic achievement have continued to contradict themselves, most researchers have supported the proposition that the effect of school size on academic achievement was limited when per pupil expenditures and school wealth remained constant (Pittman & Haughwout, 1987; Shear, 2008; Werblow & Duesbery, 2009). Most current research demonstrated a curvilinear relationship between school size and academic achievement with extremely large schools and extremely small schools performing poorer on standardized assessments than schools that fell within the middle 60% (Werblow & Duesbery, 2009). In the current study, a

curvilinear relationship between academic achievement and school size was not noted as student achievement was reported to be higher in schools with larger enrollments. However, as all schools examined produced academic achievement means with limited variability, it can be said that this lack of variability between scores limited the ability of the study to produce corroborating results with prior research.

School Climate

The guiding research question for this study with regard to school climate was: What was the relationship between the size of the student population in rural secondary schools of South Georgia and the school climate as measured by a portion of the Teacher Opinion Inventory used in the accreditation process by the Southern Association of Colleges and Schools? The major finding in this study with regard to school climate was: small schools experience a more positive school climate than medium and large schools.

More than 40 years ago, Rutter et al. (1979) proved that a positive school climate correlated to increased student learning and academic achievement. Moreover, studies conducted by Lee and Bryk (1989) and Rumberger and Palardy (2005) demonstrated improved academic achievement in schools with a positive school climate. As a result, it has since become important to further research what factors impact school climate. The results from this study indicated that increased school size negatively impacts school climate in rural South Georgia schools; however, it is interesting to note that although school size negatively impacted school climate in this study, academic achievement was lower in the smaller reporting schools. These results were contradictory to reports by Rutter et al. (1979) in that this study showed a positive correlation between school climate and academic achievement.

Fowler and Walberg (1991) showed that school climate decreases as student achievement increases. Participation in extracurricular activities, opportunities for students and teachers to experience leadership positions, increased drop-out rates, and higher incidents of violence were increased in schools with higher enrollments (Cox, 2002; Lawrence, 2005; Pittman & Haughwout, 1987). Conversely, small schools were associated with positive school climate throughout the literature. Experts suggested that positive social relationships were more readily developed and maintained in small schools (Abbott et al., 2002, Gentry, 2000; Lawrence, 2005). Moreover, vandalism, violence, and incidents of disruptive behavior were less prevalent in smaller schools (Abbott et al., 2002; Boss, 2000).

Conclusions

The purpose of this study was to examine schools of a specific size in rural South Georgia in order to determine if a relationship exists between academic achievement controlling for socio-economic status and school climate when size was the chief consideration. In the study, academic achievement data from the mathematics 2007-2009 Georgia High School Graduation Test were used to provide the researcher with academic achievement data for the examined schools in South Georgia. Additionally, the results from a school climate survey administered to the faculty in one small, one medium, and one large high school were used to provide school climate data.

Based on the findings in this study and a review of the related literature, a conclusion cannot be drawn about the extent to which school size effects academic achievement in rural South Georgia High Schools as measured by the GHSGT. Although medium and larger schools in this study performed better than small schools on the

examined administrations of the GHSGT, similar studies throughout the literature have produced conflicting results as large schools have correlated to increased achievement in some instances and small schools have correlated to increased achievement in others.

When considering the results from this study and the literature, it can be concluded that SES has the potential to mitigate the effects of school size on academic achievement as measured by the GHSGT. When school wealth was introduced and eliminated as a confounding variable, significance was reported as the gap between small, medium, and large schools was lowered These findings were consistent with previous research on socio-economic status, school size, and academic achievement (Cox, 2002; Lawrence, 2005; Pittman & Haughwout, 1987).

The researcher's findings and a review of the related literature can be used to conclude that increased enrollment negatively influences school climate in rural South Georgia High Schools. Although this study was limited to just three schools, its results affirmed the impact of school size on aspects of school climate. Additionally researchers from previous studies have confirmed the positive relationship between positive school climate and schools with lower enrollments in secondary schools.

Implications

It has been the intent of the researcher to contribute to the understanding of the issue of school size and its relationship to both academic achievement and school climate. The findings of this research have multiple implications for educators, administrators, policy makers and education theorists as they continue to attempt to improve high schools. As these results were specific to rural South Georgia, the findings will be of

particular importance locally to school leaders as they continue to debate school consolidation in the coming years.

In the years to come, school size will be one of the chief considerations as local school boards and administrators consider future school consolidation and school construction. In this study, the researcher examined the effects of school size on academic achievement as measured by the last three testing administrations of the mathematics Georgia High School Graduation Test (GHSGT). This study indicated that academic achievement was improved as school enrollment increased, but researchers found conflicting results when academic achievement was examined for schools with regard to size in previous studies (Pittman & Haughwout, 1987; Shear, 2008; Werblow & Duesbery, 2009).

As a result of this study, high school size continued to remain a significant factor in predicting academic achievement among rural South Georgia High Schools. Consequently, school size should continue to be a factor when planning for the needs of rural South Georgia high schools and rural South Georgia High School students. When school climate was measured in three examined schools, the results indicated that increased school enrollment was negatively correlated to school climate. These results were consistent with findings from related studies.

Recommendations

Due to time constraints, several limitations were made on this study. The results of the study were limited to three testing administrations of the mathematics Georgia High School Graduation Test (GHSGT). Additionally, school climate data was limited to respondents from three schools. Considering those limitations, it could prove useful for

future researchers to expand upon this research by including more content areas of the GHSGT. Moreover, it would also likely be beneficial to survey teachers from more schools within rural South Georgia. Although time sensitive, increasing the number of schools would make it possible to control for socio-economic status when examining school climate as it would provide the necessary degrees of freedom.

Dissemination

The focus of this study was academic achievement and school climate when compared among schools of a particular size in rural South Georgia. As these results will be useful to local educators and school board members, findings will be made available to these persons. Through multimedia presentations and other print media, the researcher can share the results of this study to stakeholders needing multiple sources of information when considering school construction and consolidation. Additionally, the researcher intends to make the results from this study available to his cohort members.

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APPENDICES

APPENDIX A

HIGH SCHOOLS INCLUDED IN THE STUDY

Systems	Schools	GHSA Class	RESA	Enrollment	Wealth	F&R Lunch	Math GHSGT
Montgomery County	Montgomery County High School	A	Heart of Georgia	325	53%	59%	94%
Wilcox County	Wilcox County High School	A	Heart of Georgia	407	90%	60%	91%
Telfair County	Telfair County High School	A	Heart of Georgia	456	67%	56%	94%
Clinch County	Clinch County High School	A	Okefenokee	460	48%	45%	91%
Bulloch County	Portal High School	A	First District	464	40%	49%	93%
Bacon County	Bacon County High School	A	Okefenokee	468	87%	38%	91%
Pulaski County	Hawkinsville High School	A	Heart of Georgia	476	64%	43%	88%
Candler County	Metter High School	A	First District	492	88%	53%	93%
Evans County	Claxton High School	A	First District	508	81%	55%	91%
Bryan County	Bryan County High School	A	First District	510	35%	39%	89%
Wheeler County	Wheeler County High School	A	Heart of Georgia	519	85%	58%	88%
Atkinson County	Atkinson County High School	A	Okefenokee	520	98%	56%	90%
Treutlen County	Treutlen County High School	A	Heart of Georgia	578	96%	51%	82%
McIntosh County	McIntosh County Academy	AA	First District	579	13%	55%	86%
Long County	Long County High School	AA	First District	602	96%	47%	96%
Vidalia City	Vidalia High School	AA	First District	689	66%	44%	92%
Laurens County	East Laurens High School	AA	Heart of Georgia	705	78%	47%	88%
Bleckley County	Bleckley County High School	AA	Heart of Georgia	753	98%	39%	94%
Jeff Davis County	Jeff Davis High School	AA	First District	763	94%	42%	94%
Charlton County	Charlton County High School	AA	Okefenokee	811	41%	45%	93%
Dublin City	Dublin High School	AA	Heart of Georgia	817	34%	57%	92%
Toombs County	Toombs County High School	AA	First District	821	92%	52%	92%
Bulloch County	Southeast Bulloch County High School	AA	First District	863	40%	26%	98%
Tattnall County	Tattnall County High School	AA	First District	918	91%	52%	95%
Screven County	Screven County High School	AA	First District	930	64%	58%	93%
Appling County	Appling County High School	AA	First District	941	46%	45%	94%
Pierce County	Pierce County High School	AA	Okefenokee	957	84%	36%	97%
Brantley County	Brantley County High School	AA	Okefenokee	980	97%	35%	92%
Dodge County	Dodge County High School	AA	Heart of Georgia	1004	89%	46%	95%
Laurens County	West Laurens High School	AAA	Heart of Georgia	1131	78%	29%	94%
Liberty County	Liberty County High School	AAA	First District	1305	87%	32%	92%

Bryan County	Richmond Hill High School	AAA	First District	1392	35%	9%	97%
Wayne County	Wayne County High School	AAAA	First District	1464	79%	36%	94%
Bulloch County	Statesboro High School	AAAA	First District	1465	40%	35%	97%
Ware County	Ware County High School	AAAA	Okefenokee	1486	88%	43%	91%
Effingham County	South Effingham High School	AAAA	First District	1486	58%	13%	96%
Effingham County	Effingham County High School	AAAA	First District	1676	58%	25%	96%
Coffee County	Coffee County High School	AAAAA	Okefenokee	1503	89%	44%	91%
Liberty County	Bradwell Institute	AAAAA	First District	1880	87%	39%	91%
Camden County	Camden County High School	AAAAA	First District	2932	43%	24%	97%

APPENDIX B

SCHOOL CLIMATE SURVEY

Thank you for agreeing to participate in this survey. Please indicate the response that you believe to be most appropriate regarding your school climate.

1. What is the Georgia High School Association (GHSA) designation for your school?

    1A 2A 3A 4A 5A
    ○   ○   ○   ○   ○

2. Adequate security measures are in place at our school.

    SD D N A SA
    ○   ○ ○ ○ ○

3. Class sizes at our school are appropriate for effective learning.

    SD D N A SA
    ○   ○ ○ ○ ○

4. Students are respectful of school and community property.

    SD D N A SA
    ○   ○ ○ ○ ○

5. Cheating is strongly discouraged at our school.

    SD D N A SA
    ○   ○ ○ ○ ○

6. All students and staff at our school are treated with respect, regardless of race, religion, or gender.

    SD D N A SA
    ○   ○ ○ ○ ○

7. School rules apply equally to all students.

    SD D N A SA
    ○   ○ ○ ○ ○

8. Our school provides a safe and orderly environment for learning.

    SD D N A SA
    ○   ○ ○ ○ ○

9. Substance abuse (alcohol/drug) is not a problem at our school.

    SD D N A SA
    ○   ○ ○ ○ ○

10. There are no problems with bullies at our school.

    SD D N A SA
    ○   ○ ○ ○ ○

11. School discipline is appropriately maintained at our school.

    SD D N A SA
    ○   ○ ○ ○ ○

12. Our students' family members feel welcome at our school.

    SD D N A SA
    ○   ○ ○ ○ ○

13. For the most part, I am satisfied with our school.

    SD D N A SA
    ○   ○ ○ ○ ○