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An explanatory examination of relationships between measures of school and student socioeconomic status and reading and math achievement of Hispanic limited English proficient (LEP) high school students

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An Explanatory Examination of Relationships between Measures of School and Student

Socioeconomic Status and Reading and Math Achievement of Hispanic Limited English

Proficient (LEP) High School Students

by

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Dedication

This dissertation was dedicated to my dear friends, Bill Bowen and Charlie Coffee, who provided constant encouragement throughout my pursuit of this degree.

To my parents, who in pursuit of a better life for themselves and hopes of a future for their children spent their first nights with their children in a refugee camp in this country in pursuit of an opportunity for a healthy, productive life for my brothers and me.

To my colleague and dear friend, Brenda Troy, this has been a sometimes funny, sometimes sad, and sometimes exciting adventure. May the adventures of Lewis and Clark, and Sacajawea continue.

To my seasonal suitcase friends, that like my favorite sweaters, I fold and place into a suitcase and tuck underneath my bed when spring brings in warmer weather, only to take out again in the fall. I dedicate this study to my dear friends that I have not seen during this season of my life. I look forward to starting a new season with you and new friends to come.

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An Explanatory Examination of Relationships between Measures of School and Student Socioeconomic Status and Reading and Math Achievement of Hispanic Limited English Proficient (LEP) High School Students

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ABSTRACT

Hispanics are the largest and fastest growing minority population in the U.S. requiring limited English proficiency services (Guglielmi, 2008). Many schools and school districts place heavy emphasis on high stakes testing. The No Child Left Behind (NCLB) Act of 2001 requires all children to have access to a fair, equal, and high-quality education. Many schools and school districts focus on individual students to show grade level performance for small populations such as limited English proficient (LEP) students. The purpose of this study was to examine the question, "What was the relationship between measures of school and student socioeconomic status, and reading and math achievement of Hispanic LEP high school students?"

Guiding this study was the conceptual framework, the middleclass education concept. This concept suggested that underprivileged students attending an impoverished school had lower academic success than did underprivileged students attending a middleclass school with middleclass values.

This study was developed from secondary data analysis of archived data from the Pinellas County School Board database. Pearson correlation coefficients were computed between the variables in this study. The correlation analysis was followed by a multiple regression analysis to estimate the capacity of the subsidized meal program, student absences, gender, grade point average (GPA), and the Norm Referenced Test (NRT) reading and math to explain reading and math achievement, as defined by the Florida Comprehensive Assessment Test in reading and math.

The results of this study provided insight that the role played by indices of school and student SES may be different for Hispanic LEP students than for other minority students, such as African American and Hispanic or Latino high school students. The results showed that measures of SES were not as strong as expected based on the current research literature. GPA and NRT provided the strongest explanation of variability for FCAT reading and math scores. Other indicators such as student absences and gender were not statistically significant for explaining the FCAT reading and math scores. Thereby, indicating that the conceptual framework, the Middleclass Education Concept, may not apply to Hispanic LEP high school students and thus, further research for this population is needed.

Chapter 1

Introduction

Overview of Chapter 1

This chapter introduced the research problem and the significance of the study.
This was followed by a brief summary of the literature, the purpose of the study, the
conceptual framework, the nature of the study, the research questions and hypotheses, the
data collection method, definition of key terms used, the limitations, and delimitations of
the study, followed by a summary. Chapter 1 concluded with an overview of the
upcoming chapters.

As the U.S. population of foreign-born residents from Spanish-speaking countries
increases, schools and school districts will need to develop educational strategies to meet
the needs of the increasing Hispanic limited English proficient (LEP) population. The
purpose of this study was to examine the relationship between school socioeconomic
status (SES), participation in the subsidized meal program, student absences, gender,
grade point average (GPA), Florida Comprehensive Assessment Test (FCAT), and Norm
Reference Test (NRT) reading and math, and the achievement of Hispanic LEP students.
This study sought to determine at what level of school SES did Hispanic LEP
sophomores start to exhibit significantly poorer scores in reading and math achievement.

The U.S. experienced an increase in foreign-born residents of 1.4% between 2000 and 2006 (American FactFinder, 2006). In 2006, the majority of the foreign residents, 12.5% of the U.S. population, spoke Spanish as their primary language (American FactFinder, 2006). Researchers such as Alexander and Salmon (2007), Andres, Adamuti-Trache, Yoon, Pidgeon, and Thomsen (2007), and Arbona and Nora (2007) have noted that poverty disproportionately affects the minority population. Indeed, the 2003 American Community Survey (ACS), conducted by the U.S. Census Bureau, estimated the percentage of Hispanic families with children fewer than 18 years of age living in poverty was 46.3% for female householders with no spouse present. This was followed by African Americans at 42.6% and by European Americans at 32.2%, for families in the same circumstances (ACS, 2003). According to research by Naglieri, Rojahn, and Matto (2006), Unger, Ritt-Olson, Wagner, Soto, and Baezconde-Garbanati (2007), and Weaver (2007), the fastest-growing minority group in the U.S. was Hispanics with the majority being Spanish-speaking immigrants from Mexico. The ACS (2007) confirmed the studies by Naglieri et al. and Weaver. The Hispanic population surpassed 45 million persons to comprise 15.1% of the total U.S. population, thus constituting the largest minority population. African Americans followed Hispanics at over 37.3 million persons, or 12.7% (ACS, 2007).

The data were clear that Hispanics represented the fastest growing culturally and linguistically diverse population in the U.S. The ACS (2007) estimated that over 55 million persons, or 19.7% of the U.S. population, spoke a language other than English at home and of these, more than 24 million, 8.7% of the U.S. population, spoke English less

than very well. Spanish, at over 34 million persons, or 8.7% of the U.S. population, was the most widely spoken language at home other than English. Of the 8.7%, over 16 million, or 5.8%, spoke English less than very well. The remainder of the over 20 million persons, or 7.4% of speakers of languages other than English, included Indo-European, Asian and Pacific Islander, and other language speakers. Of these, over 8 million or 2.9% spoke English less than very well. Thus, Spanish was the predominant language spoken at home after English, and Spanish speakers were the largest population to speak English less than very well (ACS, 2007). Using data from the U.S. Department of Education, Abedi, Hofstetter, and Lord (2004) estimated the majority (74%) of LEP students across the U.S. were Hispanic, followed by Vietnamese (2%). The need for an increase in the understanding of the impact of SES on Hispanic LEP students was evident in the estimated 40% increase of the Hispanic K-12 LEP population by the year 2030 (Guglielmi, 2008). As the largest group, Hispanic LEP students were the most important, for practical purposes, to study. Hispanic LEP students differed from Hispanic students in that LEP students spoke a language other than English at home and non-LEP students were either English speaking only or bilingual. The addition of Spanish spoken at home differentiated the Hispanic student from the Hispanic LEP student. The additional language spoken at home made the Hispanic LEP population a particularly interesting and unique population, worthy of further study. Therefore, the sample for this study was Hispanic LEP students, a subgroup of the Hispanic population.

It was impractical to study the entire Hispanic LEP population of the U.S. Although Florida had the fourth largest population of Hispanics, Pinellas County had a

smaller proportion of Hispanics than Florida as a whole. Therefore, unlike many counties in the state, Hispanics were still a minority group. Although all Hispanic LEP students could have been selected, this study was limited to high school sophomores due to the testing requirements of the Florida Comprehensive Assessment Test (FCAT) that required testing of all 10th grade students. Further, the literature indicated that Hispanic juniors and seniors had a higher dropout rate. Therefore, because of the mandatory age requirements that children must attend school until the age of 16, at which time students may quit with parental permission, juniors and seniors were excluded from this study, leaving sophomores as a logical population.

The ACS (2007) estimated the Hispanic proportion of the population in various states. New Mexico at 44.1%, California at 35.7%, Texas at 35.5%, Nevada at 24.3%, and Florida at 20.1% were the states with the highest percentage of Hispanics of any race. According to the ACS (2007), there were 61,561 Hispanic persons residing in Pinellas County, Florida. Of these residents, there were 2,232 Hispanic students enrolled in grades 9-12 in the 16 traditional high schools in Pinellas County. Of these students, 833 were enrolled as LEP students in grades 9-12.

Literature Review

The research by Warren and Jenkins (2005) substantiated the need to examine the relationship between SES indices and academic achievement in states with high stakes testing such as Florida. In a related study, Warren and Edwards (2005) revealed that in states with high stakes testing, such as the Florida Comprehensive Assessment Test

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(FCAT), minority students were at a greater risk of dropping out of school than in states without a high stakes test. Both studies referenced SES as one of the factors affecting the academic attainment of Hispanic students.

Guglielmi (2008) reported that minority and linguistically isolated populations were disproportionately represented in impoverished communities. Similarly, Attewell and Domina (2008) concluded in their research that minority children were disproportionately represented in the welfare system in California. The research by Attewell and Domina, and Guglielmi concluded that underprivileged children lived in communities that poorly served the needs of children.

In the studies by Arbona and Nora (2007), Burris, Heurbert, and Levin (2006), and Martin, Karabel, and Jaquez (2005), Hispanics were identified as the least proportionately represented population in educational attainment. Burris et al. (2006) concluded that the education gap between Hispanics and non-Hispanics was evident by college admission rates. Burris and colleagues concluded low SES factors such as lower quality high school course offerings available to Hispanic students and the influence of peers in the classroom contributed to lower educational attainment. Their research supported the research by Arbona and Nora that cited Hispanics as having disproportionately the lowest college attainment level. Martin at al. (2005) attributed the affects of poverty such as the quality of education to disproportionately low college application rates.

The literature did not provide for a uniform definition of SES. Rather, SES was most often described as a construct definition using multiple variables. Specifically,

Burris et al. (2006) and Martin at al. (2005) included participation in the subsidized meal program as part of the construct definition for student and school SES. Chen (2008) and Kennedy, Green, and Huerta (2007) included ethnicity as part of the composite definition for SES. Lastly, Lewis and Cheng (2006) included both ethnicity and participation in the subsidized meal program as part of their composite definition for SES.

The research by Nichols (2003) and Reyes and Capper (1991) on education and poverty maintained that economically disadvantaged students had negative attitudes about school, lower grades, and increased school absences. Nichols cited the low school attendance of underprivileged students as a possible reason for the increased dropout rate of minority children. He determined low SES students experienced lower school attendance than did students from a middleclass background. Thus, concluded that public education failed to teach minority children adequately.

A review of the literature indicated that gender and parenthood played roles in academic achievement and the wellbeing of students. Sus, Houston, and Suh (2007) noted a relationship between single mothers' educational attainment and her children's educational attainment. Arbona and Nora (2007) found that the college aspiration rate for women showed an increase over men attaining a college degree. Further, Baer and Schmitz (2007) added that bilingual Hispanic mothers played a role in their children's language use in the home. In general, the literature showed a positive relationship among female-headed households, poverty, and unemployment, and the educational attainment of their children.

Research Problem and Significance

A great number of researchers have described the relationship between SES and academic achievement for African Americans, Hispanics, and underprivileged children. The vast body of knowledge suggested that minority populations were disproportionally impoverished. However, the research literature was relatively silent regarding the relationship between SES and academic achievement of Hispanic LEP students. Educators may have assumed that the effects of poverty, such as literacy and educational attainment as evident on African Americans and Hispanic students, also held true for the Hispanic LEP population, as indicated by the literature review.

For many schools and school districts, there was an emphasis on high stakes testing (Abedi, 2004; Armor, 2006; Johnson, 2007; Kahlenberg, 2004). The No Child Left Behind Act of 2001 required that all children should meet Adequate Yearly Progress (AYP) by performing at grade level.

> Federal Law – No Child Left Behind Act: requires each subgroup (all ethnic groups, students with disabilities, students learning English, and economically disadvantaged students) in schools, districts, and the state as a whole to make adequate yearly progress (AYP) in reading, mathematics, writing, and graduation rate (No Child Left Behind Act of 2001, 2002, (Corporate Author, 2001).

Many schools and school districts have focused on small groups of students to show a substantial percentage increase in AYP for subgroups such as minorities, students with disabilities, and LEP students (Meier, Kohn, Darling-Hammond, Sizer, & Wood,

2004). An explanatory method for identifying struggling Hispanic LEP students based on SES would have been significant in increasing the understanding to help schools develop educational strategies to meet the requirements of AYP for the Hispanic LEP student. The findings from this study provided a meaningful understanding of the relationship between academic achievement and school SES, participation in the subsidized meal program, student absences, gender, GPA, FCAT, and NRT reading and math for Hispanic LEP high school sophomores. The results may assist school districts in identifying and implementing policies, such as pupil assignment based on the percentage of students participating in the subsidized meal program, which may improve student academic achievement for the fastest-growing LEP population.

Thus, the indices that this research investigated was the effect of school SES, participation in the subsidized meal program, student absences, gender, GPA, FCAT, and NRT reading and math on the reading and math achievement of Hispanic LEP sophomores in an effort to help school districts develop educational strategies to meet the needs of Hispanic LEP students. Additionally, this study helped address the problem of the gap found in the research literature regarding the relationship between SES and reading and math achievement of the Hispanic LEP student. Lastly, this study expanded the knowledge base regarding the relationship between the SES of the school and the reading and math achievement of Hispanic LEP students.

Nature of the Study

In general, researchers in the field specializing in quantitative studies of minority issues in education have utilized correlational-design multiple regression analyses to explore the relationships between a dependent variable and independent variables. Specifically, researchers such as Baer and Schmitz (2007), Carpenter, Ramires, and Severn (2006), Naglieri, Winsler, and Booth (2004) and others employed multiple regression analysis to study the relationship among independent continuous variables, such as absences from school, and categorical variables, such as gender, to a dependent continuous variable, such as Grade Point Average (GPA). The focus of this study included two dependent variables studied individually, FCAT reading, and FCAT math scores.

Although many variables could have been used in a multiple regression analysis, Stevens (2007) cited compelling reasons to limit the number of predictor variables. Stevens presented the principle of scientific parsimony as a reason to limit the number of predictor variables. Weisberg and Weisberg (1985) argued that the best selection of variables was based on prior knowledge based on research. Therefore, the predictor variables in this study, also known as independent variables, were selected from the extensive literature review associated with this study

Research Question for Reading

This study tested the following questions and hypotheses: if there were a positive relationship between school SES and FCAT reading achievement, then, at what level of school SES did Hispanic LEP sophomores start to exhibit significantly poorer scores in

reading achievement as defined by the FCAT after controlling for the effects of the subsidized meal program, student absences, gender GPA, and NRT reading?

Research Hypotheses for Reading

1. There will be a negative relationship between enrollment in the subsidized meal program and reading achievement scores after controlling for the effects of school SES, student absences, gender, GPA, and NRT reading.

2. There will be a relationship between the gender of Hispanic LEP students and academic reading achievement scores after controlling for the effects of school SES, the subsidized meal program, student absences, GPA, and NRT reading such that among Hispanic LEP students, females will have higher FCAT reading scores than males.

3. There will be a negative relationship between student absences and reading achievement scores after controlling for the effects of school SES, the subsidized meal program, GPA, and NRT reading.

4. There will be a positive relationship between GPA and reading achievement scores after controlling for the effects of school SES, the subsidized meal program, gender, and NRT reading.

5. There will be a positive relationship between NRT reading and reading achievement scores after controlling for the effects of school SES, the subsidized meal program, student absences, gender, GPA.

Research Question for Math

If there was a positive relationship between school SES and FCAT math achievement, then, at what level of school SES did Hispanic LEP sophomores start to exhibit significantly poorer scores in math achievement as defined by the FCAT after controlling for the effects of the subsidized meal program, student absences, gender GPA, and NRT math?

Research Hypotheses for Math

1. There will be a negative relationship between enrollment in the subsidized meal program and math achievement scores after controlling for the effects of school SES, student absences, gender, GPA, and NRT math.

2. There will be a relationship between gender of Hispanic LEP students and academic math achievement scores after controlling for the effects of school SES, the subsidized meal program, student absences, GPA, and NRT math such that among Hispanic LEP students, females will have higher FCAT math scores than males.

3. There will be a negative relationship between student absences and math achievement scores after controlling for the effects of school SES, the subsidized meal program, GPA, and NRT math.

4. There will be a positive relationship between GPA and math achievement scores after controlling for the effects of school SES, the subsidized meal program, gender, and NRT math.

5.	There will be a positive relationship between NRT math and math achievement scores after controlling for the effects of school SES, the subsidized meal program, student absences, gender, and GPA.

Methods

Kromrey, Onwuegbuzie, and Hogarty, as cited in Permuth and Mawdsley (2006), explained that "correlational research could have been utilized to examine the relationship between minority representation and achievement" (p. 99). Therefore, a correlational design, also generally known as non-experimental or non-manipulative, was proposed to address the relationship between school SES, participation in the subsidized meal program, student absences, gender, GPA, FCAT, and NRT reading and math, and reading and math achievement of Hispanic LEP students.

Although a correlational analysis was an appropriate method as it was designed to describe the relationship between variables, it was important to note that correlation was not causation. The intent of this study was not to prove causation, but rather, to determine if there was a relationship among the dependent variables, FCAT reading and math scores, and the independent variables, school SES, participation in the subsidized meal program, student absences, gender, GPA, FCAT, and NRT reading and math.

Purpose of the Study

The purpose of this study was to examine the relationship between school SES, participation in the subsidized meal program, student absences, gender, GPA, FCAT, and

NRT reading and math, and reading and math achievement for Hispanic LEP sophomores in the 16 traditional high schools in Pinellas County, Florida. To address the central question, what was the relationship between these variables and reading and math achievement for Hispanic LEP sophomores?

The Florida Comprehensive Assessment Test (FCAT) reading scores and FCAT math scores were employed as a measure of reading and math success. The FCAT test was a standardized test administered to all students in Florida, providing a score that was comparable from one participant to another and from one school to another in any public high school in the state. Since all public high school students were required to take the FCAT during their sophomore year, the FCAT scores provided a measure of the reading and math success of Hispanic LEP sophomores. This correlational study used six independent variables selected from the literature review in Chapter 2 of this study:

1. The independent variable, school SES, was a composite definition that included student percentage of participation in the subsidized meal program and the percentage of African American and Hispanic students per school.

2. The SES of the students was the second independent variable, defined by participation in the subsidized meal program.

3. A third independent variable was the number of absences of the students as an explanatory variable based on literature that demonstrated a relationship between SES and school attendance of minority students.

Absences was a continuous variable representing the total number of days each student was absent for the 2007-2008 school year.

4. Gender was included as an explanatory variable due to the growing body of knowledge that cited the increase of reading and math achievement among female students.

5. Grade Point Average (GPA) was included as an explanatory variable based on the literature cited a relationship between SES, minority students, and GPA.

6. FCAT NRT reading and math scores were selected as an independent variable as a means of comparing one student to his or her peers taking the same or equivalent test, such as the Stanford 10 Achievement Test from 2005-2008. Beginning in 2008, with the passing of Senate Bill 1908, school districts are no longer required to administer the norm-referenced component of the FCAT.

Lastly, Hispanic students were selected taking part in one of the four LEP categories as the target sample for this study: (1) TT = at least one YES response on the Home Language Survey (HLS) test, (2) LY = ELL, eligible for ESOL services, (3) LF = language fluent, exited, will be monitored for two years, (4) LZ = after a 2-year monitoring period, LF turns into LZ. A full description of the sample selection process was described in Chapter 3 of this study.

Conceptual Framework

The middleclass-education concept holds that school structures built on White middleclass American culture differed from those of minority, impoverished culture (Kahlenberg, 2002). According to Kahlenberg, White middleclass schools differed from minority, impoverished schools, in that White middleclass schools were able to provide an adequate financial base, smaller class size, increased technology, and an orderly learning environment as compared to minority impoverished schools that found it difficult to provide those same benefits. Indeed, minority children attending a middleclass school had higher reading and math achievement than did middleclass children attending a low SES school. SES was defined by participation in the subsidized meal program (U.S. Department of Education, 2002). The influences of peers, parents, and teachers were cited as some of the variables for academic success in middleclass schools. Hoxby (2002) found that minority students showed increased academic performance when surrounded by academically motivated peers. Middleclass parents had greater resources to volunteer in schools and push for higher academic expectations than their lower middleclass counterparts. Teachers in low SES schools had higher attrition than did teachers in middleclass schools; further, lower SES schools had a higher percentage, 34%, of educators teaching out of field than did middleclass schools, which had a 19% rate of teachers out of field (Ingersoll, 2004). Thus, the literature suggested that underprivileged students, attending a poor school, had less academic success, lower grade point averages, and a greater number of absences than did underprivileged students attending a middleclass school with middleclass values.

Data Collection

The data employed in this study were the 2006-2007 and 2007-2008 school years to attribute the school effect on the student population. The pre-existing data were downloaded from the Pinellas County School System's database, referred to as the SASI system. The archival nature of the SASI database made it possible for other researchers to replicate this study, thereby making the SASI database an effective means of gathering data to study the relationships between reading and math achievement and the SES of the school. Because SASI allowed for universal data collection for the population within its designated parameters, there was no need to conduct a random sampling to ensure group representation of the population; rather the data for all registered public high school students in the district was readily accessible. To increase the validity of this study, all Hispanic LEP sophomores in Pinellas County high schools were included in this study. This study limited the participants to 10th grade (sophomore) students who were enrolled in the same school during the 2006-2007 and 2007-2008 school years in order to attribute the relationship between school SES, participation in the subsidized meal program, student absences, gender, GPA, FCAT, and NRT reading and math to the school.

During the 2006-2007 and 2007-2008 school year, Pinellas County had 16 traditional high schools and three alternative secondary schools. All 16 high schools in the Pinellas County School District, Florida were included in the research. Alternative school programs were excluded from this study due to their enrollment policies that permitted students to register in alternative education for a limited time. Due to school zoning, each school matriculated different percentages of students of different SES,

ethnicity, and race, and participation in educational and subsidized meal programs. Although studies have used students on the subsidized meal program as the exclusive indicator for SES, this study used the combined percentage of students participating in the subsidized meal program and the percentage of African American and Hispanic students as the indicator for SES as cited in other studies such as Lewis and Cheng (2006). To help ensure the privacy of the participants and maintain an ethical study, the names of the schools were omitted to prevent any potential stigmatization (Stein, 2004). The schools were rated on a scale to indicate degree of poverty, as measured by the percentage of students registered in the subsidized meal program and the percentage of African American and Hispanic students. See Chapter 3 for sample selection method.

Definition of Key Terms

*Reading and math achievemen*t: operationally defined as the FCAT reading and math scores with a higher score indicating a greater reading and math achievement level.

Adequate Yearly Progress (AYP): a minimum of academic gains as defined by the No Child Left Behind Act (NCLB) 2001. AYP targeted participation and performance of various subgroups (White, Black, Hispanic, Asian, American Indian, economically disadvantaged, limited English proficient, and students with disabilities). In Florida, the foundation of AYP was the FCAT.

Dropout: a term used by the federal government to define students who had not completed the 12th year of high school and were not registered in school.

European American: see White.

Florida Comprehensive Assessment Test (FCAT): a state mandatory assessment instrument used to evaluate Florida public school students' achievement as represented by the Florida Sunshine State Standards. The test was given only in public schools, though private school students who received opportunity scholarships must have also taken the FCAT. Home education students were tested only if their parents or guardians selected the FCAT as an evaluation option.

FCAT Norm Referenced Test (NRT): the NRT allows for comparisons of student's score against the scores of a group of peers taking the same or equivalent test, such as the Stanford 10 Achievement Test from 2005-2008. With Senate Bill 1908, Florida law removed the requirement to administer the norm-referenced component of the FCAT.

Grade Point Average (GPA): for the purpose of this study, GPA was a cumulative variable based on a 4 point scale where A = 4, B = 3, C = 2, D = 1, and F = 0. High school students start accumulating GPA with their first high school credit.

Hispanic or Latin persons: persons of Cuban, Mexican, Puerto Rican, as well as South or Central American or other Spanish culture or origin regardless of race (U.S. Census Bureau, 2007). For the purpose of this study, the Federal term, Hispanic, was used, although terms such as Hispanic and Latino/Latina were interchangeable in the research literature.

Limited English Proficiency (LEP): a term used by the federal government to describe people who were deficient in the English language. Students who spoke a language other than English at home and had limited speaking, reading, and writing ability to understand English and scored below a designated level on the Language

Assessment Battery-Revised (LAB-R) and New York State English as a Second

Language Achievement Test (NYSESLAT), may have been eligible for LEP services.

No Child Left Behind (NCLB) Act of 2001: a federal policy signed into law in

2002 designed to increase the academic achievement of all students. The law-required

states receiving federal funds to evaluate all students in public schools to determine

whether schools, school district, and states have met adequate yearly progress. The goal

of No Child Left Behind was to have 100% of the students proficient in reading, writing,

and math by 2013-2014.

Minority: operationally defined as African American and/or Hispanic students for

the purpose of this study.

Socioeconomic status (SES): a composite term used to describe the economic

status of individuals or a population. For the purpose of this study, SES referred to the

percentage of minority students and students on the subsidized meal program.

Delimitations of the Study

The focus of this study was 10th grade Hispanic LEP students in Pinellas County,

Florida. The reading and math achievement of Hispanic or other minority populations

other than the 10th grade Hispanic LEP population was outside the scope of this study.

Because of the limited access to private school educational and demographic data, this

study was limited to the 16 traditional public high schools in Pinellas County, Florida.

The purpose of this study was not to investigate the relationship between SES and the

likelihood of a Hispanic student participating in a LEP program, but rather this study

investigated reading and math achievement of Hispanic LEP students.

Summary

Chapter 1 described the fastest growing minority population, the Hispanics, and

explained that Hispanics were the largest population requiring LEP services. Hispanic

LEP students were the focus of this study that examined the relationship between school

SES, participation in the subsidized meal program, student absences, gender, GPA,

FCAT, and NRT reading and math, and reading and math achievement as defined by the

FCAT reading and math scores. In order to attribute the effect of the school to the reading

and math performance of the Hispanic LEP student, this study further limited the

population to sophomores that were registered at the same school during their freshman

year. Chapter 1 reported the research problem and significance, discussed the purpose of

this study, conceptual framework, nature of this study, research questions and

hypotheses, methods, data collection, and definitions of key terms. Chapter 1 concluded

with the limitations and delimitation of this study.

Overview of Upcoming Chapters

Chapter 2 reviewed the literature associated with the academic achievement of

minority and Hispanic LEP students. The literature introduced numerous variables to

include school SES, participation in the subsidized meal program, student absences,

gender, GPA, FCAT, and NRT reading and math as having a relationship with academic

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achievement for minority populations and Hispanic LEP students. The middleclass education concept was the guiding concept behind this study.

Chapter 3 discussed the correlation approach for this quantitative study. Chapter 3 further elaborated on the research methods: research perspective, research context, sample, dependent, and independent variables, research questions and hypotheses, correlational assumptions, instruments employed in the data collection, and research design employed in this study. Chapter 3 concluded with an explanation of the data analysis and a summary of the chapter.

Chapter 4 analyzed the results of the correlation and multiple regression analyses for this study to include a review of the research questions, hypotheses, and the important variables under consideration. Chapter 4 examined the design of the study and criteria, discussed the descriptive statistical analyses, presented the assumptions, and established the screening and diagnostic procedures. This chapter reintroduced each research question and hypothesis, and provided the results, including the descriptive statistics, the correlation matrix for FCAT reading and math, the regression analysis for FCAT reading and math, and the multiple regression formula for both reading and math scores. Chapter 4 concluded with a summary of the substantive findings and a summary of the chapter.

Chapter 5 provided a summary and a context of the findings conducted in this study to include the research problem and purpose of this study, the variables and sample, and the research design. This was followed by a summary of the research questions, hypothesis, and their respective analysis, implications and explanations of the findings, the limitations, recommendations for future researchers, and a summary of this study.

Chapter 2

Review of the Literature

Overview of Chapter 2

Chapter 2 reviews the literature associated with this study used to define key

terms (Limited English Proficient (LEP), Hispanic, minority status, and socioeconomic

status (SES)) throughout this study. The following sections examined the effect of SES

on academic achievement: (a) SES and Academic Achievement for Hispanic LEP

Students, (b) High Stakes Testing and NCLB for Hispanic LEP Students, (c) SES,

Hispanic LEP Students, and the School Community, (d) SES, Hispanic Students, and

LEP Programs, (e) SES and Ethnicity as a Variable of Academic Achievement for

Hispanic LEP students, (f) SES, Hispanic LEP Students, and Educational Attainment, (g)

SES Characteristics of Disproportionately Hispanic LEP Schools, (h) SES and

Acculturation for Hispanic LEP Students, and (i) SES, Hispanic LEP Students. Lastly,

the literature examined contradictions found in the research. Included throughout this

literature review was a critical analysis of a sample of the literature in an effort to

strengthen future research. A conclusion followed the literature review summarizing the

information ascertained in this document.

Introduction

If there is to be meaningful change in the education of Hispanic LEP children in the U.S., then there must be an understanding of the challenges faced by students who have limited English proficiency in American schools. Thus, the literature review both extended the knowledge base and identified areas for future research with respect to SES and the academic achievement of Hispanic LEP students.

Although many researchers (e.g., Alexander & Salmon, 2007; Battle & Pastrana, 2007; Flowers, 2008) have noted the relationship between socioeconomic status (SES) and academic achievement among African American and Hispanic students, few researchers have compared the academic achievement of students enrolled in Limited English Proficiency (LEP) programs based on the SES of the school. Therefore, this literature review centers on the theme of SES and Hispanic LEP students. The literature review addressed the following question: What were the relationships among school SES, participation in the subsidized meal program, student absences, gender, Grade Point Average (GPA), Florida Comprehensive Assessment Test (FCAT), and Norm Referenced Test (NRT) reading and math on the academic achievement of Hispanic LEP students?

Middleclass Education Concept

This study examined the relationships among school SES, participation in the subsidized meal program, student absences, gender, GPA, FCAT, and NRT reading and math to academic achievement of Hispanic LEP sophomores as seen through the middleclass-education concept. The middleclass-education concept holds that school

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structures built on White middleclass American culture differ from those of minority, impoverished cultures (Kahlenberg, 2002). According to Kahlenberg (2004), White, middleclass schools differed from minority, impoverished schools, in that White, middleclass schools were able to provide an adequate financial base, smaller class size, increased technology, and an orderly learning environment as compared to minority, impoverished schools that found it difficult to provide those same benefits. Indeed, minority children attending a middleclass school had higher academic achievement than did middleclass children attending a low SES school, where SES was defined by participation in the subsidized meal program (Burris et al., 2006; Lewis & Cheng, 2006; Martin et al., 2005). The influences of peers, parents, and teachers were cited as some of the variables related to academic success in middleclass schools. Hoxby (2002) reported that minority students demonstrate increased academic performance when surrounded by academically motivated peers. Because of resources, middleclass parents were able to volunteer in schools and push for higher academic expectations than their lower middleclass counterparts. Additionally, Ingersoll (2004) noted that teachers in low SES schools had a higher attrition rate than did teachers in middleclass schools; further, lower SES schools had a higher percentage, 34%, of educators teaching outside of their area of certification, known as out of field, than did middleclass schools, which had a 19% rate of teachers out of field.

The research by Hoxby (2002), Ingersoll (2004), and Kahlenberg (2004) was similar in that these authors analyzed existing data to derive their findings. Ingersoll reviewed and analyzed qualitative data from the School and Staffing Surveys and

Teacher Follow-up Survey conducted by the U.S. Department of Education's National Center for Educational Statistics (NCES).

The focus of this literature review was to provide research outcomes based on the current literature within the last five years that described the academic achievement of Hispanic LEP students compared to SES indicators. Numerous terms throughout the literature have been used to refer to students who were not native English speakers. The U.S. government used the term limited English proficient in their official documents. Yet others, because of the negative connotation of the term limited English proficiency, used English language learners (ELL). Here, ELL and LEP were interchangeable throughout this study.

Strategies for Searching Literature

First, a broad search of the literature was conducted on Hispanic and Latino LEP using multiple databases such as Education full text, ERIC (Cambridge Scientific Abstracts), Academic Search Primer, and General OneFile. Key phrases used were "bilingual education," "English as a foreign language (EFL)," "English as a second language (ESL)," "English for speakers of other languages (ESOL)," "native language," "home language," "limited English proficient (LEP)," "potential English proficient (PEP)," and "teaching English to speakers of other languages (TESOL)." Next, the pool of possible journal articles and other citations were narrowed by selecting articles related to academic achievement, or educational attainment and SES to quantitative and peer-reviewed research conducted in the United States within the last five years, from a pool

of empirical research literature from 2004-2008. Some exceptions, such as Becker's 1964 findings, were included for their historical and pertinent contribution to the role played by SES in academic achievement. Additionally, one international study by Andres, Adamuti-Trache, Yoon, Pidgeon, and Thomsen, 2007, was included for its broad characteristics of low SES schools. The search yielded 135 journal articles for the role SES played on the academic achievement and educational attainment of minority populations.

The LEP Population

LEP programs were designed to teach English to non-English speaking or limited English proficient students. School districts with more than 20 students in the same grade level and building speaking the same native language other than English were required to offer a bilingual program consisting of English language arts instructions and content area instructions with the language arts instructions delivered in English and the content area delivered in the students' native language. School districts with fewer than 20 students in the same grade level and building speaking the same native language other than English were required to offer a freestanding English as a Second Language (ESL) program consisting of both the English language arts and content area instructions delivered through instructions in English and ESL methods. Students who may have been eligible for LEP services were those students who spoke a language other than English at home. These students also had limited speaking, reading, and writing ability in English due to their rudimentary English ability. They scored below a designated level on the

Language Assessment Battery-Revised (LAB-R) and the New York State English as a

Second Language Achievement Test (NYSESLAT).

According to research by Naglieri et al. (2006), Unger et al. (2007), and Weaver

(2007), the fastest-growing minority group in the U.S. was Hispanics, with the majority

being Spanish-speaking immigrants from Mexico. The 2007 American Community

Survey (ACS) confirmed the studies by Naglieri, Unger, Weaver, and colleagues. The

Hispanic population surpassed 45 million persons to comprise 15.1% of the total U.S.

population, thus constituting the largest minority population; African Americans followed

Hispanics at over 37.3 million persons, or 12.7% (ACS, 2007). The ACS estimated that

over 55 million persons, or 19.7% of the U.S. population, spoke a language other than

English at home and of these, more than 24 million, 8.7% of the U.S. population, spoke

English less than very well. Spanish, at over 34 million persons, or 8.7% of the U.S.

population, was the most widely spoken language at home other than English; of this

8.7%, over 16 million, or 5.8%, spoke English less than very well. The remainder of the

over 20 million persons, or 7.4% of speakers other than English, included Indo-European,

Asian and Pacific Islander, and other language speakers. Of these, over 8 million or 2.9%

spoke English less than very well. Thus, Spanish was the predominant language spoken

at home following English, and Spanish speakers were the largest population to speak

English less than very well (ACS, 2007). Much of this minority population required LEP

services. The data were clear that Hispanics represent a fast growing culturally and

linguistically diverse population in the U.S. Using data from the U.S. Department of

Education, Abedi et al. (2004) estimated that the great majority (74%) of LEP students were Hispanic, followed by Vietnamese (2%).

According to Guglielmi (2008), who used data from the U.S. Department of Education, there were approximately 4.5 million pre-K to 12th-grade students identified as in need of LEP services in the U.S. in 2000-2001. Guglielmi believed that the number of Hispanic children in need of LEP services would increase 40% by the year 2030. Guglielmi derived his findings using data from NELS: 88-2000, the National Education Longitudinal Study, in which 899 LEP participants self-reported primary language (L1) proficiency. Guglielmi's multitrait-multimethod (MTMM) design used two or more traits, such as parental reading ability and parental education, and two or more methods, such as logistic and ANOVA analyses, to decompose the variance and to assess the validity of the measures used for academic achievement. According to Guglielmi, Grade Point Average (GPA), English grades, Item Response Theory (IRT) scores, and other academic variables for a total of 97 variables helped to explain 75% of the variance of the academic achievement of Hispanic LEP students. Although a sophisticated design compared to others in this literature review, Guglielmi's research provided sufficient information to allow future reanalysis of this research. Unfortunately, Guglielmi did not use the legislative definition of LEP (Title VII of P.L. 1000-297) and opted instead to use a composite definition that included numerous variables not found in legislation, thereby limiting the ability to generalize the results to fit Guglielmi's composite definition of LEP students. Guglielmi's research was similar to that of other researchers such as Attewell and Domina (2008), Battle and Pastrana (2007), Carpenter et al. (2006), Perna (2005),

Schiller and Muller (2003), Warren and Edwards (2005), and Warren and Jenkins (2005), who used NELS to conduct their research.

In Florida, the court case of the League of United Latin American Citizens (LULAC) v. State Board of Education Consent Decree (1990) brought into focus students with limited English proficiency unidentified for LEP services. The purpose of the state decree was to ensure equal treatment of LEP students as mandated by the Civil Rights Act of 1964. Under this decree, Florida agreed to identify students eligible for LEP services and provide adequate placement and services when needed. Therefore, for this study, LEP referred to persons who spoke a language other than English as their primary language and who had limited ability to understand, write, speak, or read English, in agreement with Executive Order 13166, signed into law by President Clinton on August 11, 2000, entitled Improving Access to Services for Persons with Limited English Proficiency.

In his research, Weaver (2007) used the U.S. Census definition of Hispanic as defined by the country of origin. Weaver defined Hispanics as all races to include African Americans, European Americans, and Asians as well as ethnic groups from Mexico, Puerto Rico, Cuba, and countries from Central and South America. Indeed, according to Weaver, Hispanics were a diverse population that encompassed all races. Thus, for the purpose of this literature review, Hispanics were defined using Weaver's definition borrowed from the U.S. Census (2000). In his study, Weaver analyzed the statistical data based on a large-scale national public opinion survey that consisted of approximately 2,817 participants 18 years of age and older, which was representative of the U.S. adult

population, to study prejudice between Hispanics and European Americans. For the purpose of this survey, Weaver described his methodology adequately; however, the number of minority participants was simply insufficient. Weaver's total sample, $N=$ 1479, was sufficiently large to conduct his analysis; however, his minority representation dropped to $N=$ 42 for the variable "Hispanic Contact with Whites" on which Weaver based a portion of his analysis. Further, Weaver selected the participants for certain geographic characteristics rather than by random selection. The small sample size limited generalizability of the results to other populations.

The U.S. had experienced an increase of foreign-born residents of 1.4% since the year 2000 (American FactFinder, 2006). The majority of the foreign residents, 12.5%, spoke Spanish as their primary language (American FactFinder, 2006). A review of the literature further suggested economics negatively affected the Hispanic population disproportionately. Indeed, the ACS (2003) estimated the percentage of Hispanic families with children younger than 18 living in poverty was 46.3% for female householders with no spouse present. This was followed by African Americans at 42.6% and European Americans at 32.2%, for similar families (ACS, 2003). A review of the existing literature had suggested SES played a great role in the academic achievement of minority students as reflected in the quality of education. In order to understand the relationship between Hispanic LEP students and academic achievement, there first must be an understanding of the role of SES on the quality of education in the academic achievement of Hispanic LEP students.

In summary, the majority of the LEP population was Hispanic, at almost 75% of the total LEP population. Further, as indicated by numerous census data, Hispanic was the fastest-growing minority population and the Spanish language was the most frequently spoken language in the home after English, followed by Asian languages at 7.4%. If the researchers were correct, the U.S. would continue to see an increase in the Hispanic LEP population. The literature described the majority of the Hispanic population in the U.S. as Spanish-speaking residents from Mexico, as indicated by the U.S. Census (American FactFinder, 2006).

Definition of Minority Status Used for the Purpose of this Dissertation

Guglielmi (2008) referred to the Hispanic population as the minority population requiring the highest frequency of LEP services. Attewell and Domina (2008) reported that minority and linguistically isolated populations, because of their disproportional representation within impoverished communities, most strongly experienced the effects of poverty. Although considered a minority population in the U.S., Attewell and Domina excluded Asians due to a small sample size.

In their research on the disproportionate number of minority children in the welfare system, 940 neighborhoods defined by the census tracts in three northern California counties, Freisthler, Bruce, and Needell (2007) also excluded from their study, people of Asian and American Indian descent due to low representation at the census tract level. Their research employed an ecological design considered by some researchers inferior to the cohort and case study designs (Graziano, Slavkovich, Liu, Factor-Litvak,

& Todd, 2004). Because Freisthler et al.'s (2007) research was limited to three counties in California; their study limited the ability to generalize the results to other populations such as rural areas or neighborhoods with different racial or ethnic compositions. Freisthler and colleagues adequately reported their findings; however, the authors never specified the total representation of the numerous racial/ethnic groups in their study. Simply stated, the researchers never quantified their sample size for the racial/ethnic participants in the study. Thus, the external validity of the study was limited.

Schiller (2003) noted people of Asian descent were often included in the European American comparison population. The restriction of this nature in the literature was not exclusive to the Asian population. In their research, Raver, Arber, and Gershoff (2007) restricted from their sample Alaskans, Native Americans, Pacific Islanders, Hawaiians and multi-racial families due to insufficient sample size. Additionally, Raver et al. cited Alaskans, Native Americans, Pacific Islanders, Hawaiians and multi-racial families as outside the scope of their research. Therefore, minority students were limited exclusively to African American, Hispanic, and linguistically isolated populations for the purpose of this literature review.

According to Planty from the National Center for Educational Statistics, Hispanics were disproportionately underrepresented in all levels of educational attainment (Livingston, 2008). Hispanics were least likely to have completed high school at 65% followed by African Americans at 87.7% and European Americans at 93.5%. Likewise, Hispanics were least likely to have earned a bachelor's degree at 11.6% followed by African Americans at 19.5%, and European Americans at 35.5%

(Livingston, 2008). Burris et al (2006) demonstrated an academic achievement gap between Hispanic students and European American students and that this gap was evident in college admissions. The findings by Burris and colleagues were not surprising. In addition, Arbona and Nora (2007) and Stevens and colleagues (2006) indicated that Hispanics had a low high school graduation rate and the highest dropout rate, above that of African American and European American students. In their research, Arbona and Nora calculated the percentage of Hispanics with a minimum of a bachelor's degree at 10%. Hispanics had lower rates than both African Americans, 18%, and European Americans, 34%. Martin et al. (2005) observed that Hispanics differed in college admission rates from African Americans and European Americans as a result of the effects of the Hispanics' poverty and education disparities. Raver et al. (2007) observed that Hispanic children's experiences in school were different from one another and that of African American and European American children. Indeed, Martin et al. investigated the relationship between college admissions at the University of California and discovered Hispanics had fewer per capita admissions because fewer Hispanics applied as compared to their African American and European American counterparts.

In summary, the researchers differed in their findings among minority groups. Often, low representation among certain minority groups caused the researcher to omit underrepresented groups from the statistical analysis. Such was the case with Asian Americans and Native Americans. Instead of receiving minority representation, Asian Americans were often included with the European American population, thus leaving the study population as predominately African Americans, Hispanics, and linguistically

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isolated populations. Of these, the Hispanic was the largest minority group and the

fastest-growing population. The literature further showed that the Hispanic populations

had the largest high school dropout rates and the lowest educational attainment.

Socioeconomic Status (SES)

Defining SES

In the literature review, there were numerous definitions given for SES. Burris

(2006), Lewis and Cheng (2006), and Martin et al. (2005) cited the subsidized school

lunch program as an indication of both student and school SES. Yet other researchers

such as Chen (2008), Kennedy et al. (2007), and Hoy, Tarter, and Hoy (2006), used a

composite of variables that included housing value, family income, parental educational

attainment, parental occupation, race/ethnicity, employment status, and residential

stability as an indicator of SES.

A further review of the literature showed that Attewell and Domina (2008), Battle

and Pastrana (2007), Carpenter et al. (2006), Perna (2005), Schiller and Muller (2003),

Warren and Edwards (2005), and Warren and Jenkins (2005) incorporated the most

popular triad of possible variables, defining SES as family income, parents' educational

attainment, and parents' occupation. Indeed, all these authors used NELS data to conduct

their statistical analysis.

Attewell and Domina (2008) based their findings on the NELS database from

which the researchers selected 10,046 participants. Although the NELS: 88-1992 sample

reflected national representation, Attewell and Domina did not randomly select the

participants. Although the authors provided the results of the research without specifying the number of participants in each group studied, Attewell and Domina acknowledged that, although statistically significant, their findings were based on small effect sizes used to describe students required to take additional academic courses.

Additionally, Baer and Schmitz's (2007) study consisted of 4,156 people of Mexican ancestry and European Americans during a three-year period exclusively used maternal education as an indicator of SES. In their research, Alexander and Salmon (2007) further defined absolute poverty to include the inability to provide the basic needs to maintain life. Their research also supported other research that concluded poverty existed disproportionately in schools with a high minority student population to include Hispanic students enrolled in LEP programs. Lastly, Rumberger and Palardy (2005) provided the final delineation of higher SES as one standard deviation above the mean.

In summary, the researchers allowed for multiple definitions of SES. This pliable definition of SES allowed researchers to use the existing data to delineate their study population into subgroups for finding trends in the data. Although not explicitly defined, the majority of the researchers used parental education, family income, and parental occupation as the most popular variables to define SES. Further, the researchers pointed to a relationship between SES and the academic achievement of Hispanic and linguistically isolated students.

SES and Academic Achievement for Hispanic LEP Student

The current official definition of poverty was developed in the 1960s in President Johnson's administration, and was adjusted yearly, using data from the Consumer Price

Index (Duncan, 1994). In the year 2007, the average threshold for poverty for a household of four was $21,202 (American FactFinder, 2007). Poverty clearly transcends all race, ethnicity, and gender (Love, 2007). Additionally, researchers have shown a positive relationship between academic achievement and SES (Arbona & Nora, 2007; Fry, 2005; Raver et al., 2007; Stevens, Olivarez, & Hammon, 2006). The researchers have also suggested that the longer the student lived in poverty, the more pronounced the decrease in academic achievement became (Duncan, 1994; Raver et al., 2007). Martin et al. (2005), in a data set from 1,069 public and private high schools in California in the fall of 1999, noted that the inequalities found between SES and high school course offerings. Duncan, Martin and colleagues, and Raver and others, discovered that the higher the SES of the student population, the greater the course offerings of college preparatory classes. Additionally, they noted that a college preparatory curriculum related positively to an increase in college admission. Fry acknowledged that school characteristics were related to the education gap between Hispanic and non-minority students. However, Fry also noted that school characteristics did not explain the entire education gap. His study, based on data tabulated from the Pew Hispanic Center, used data from the U.S. Department of Education's survey from the 2002-2003 school year.

Arbona and Nora (2007) also substantiated the relationship between SES and high school course offerings. They used a national survey conducted by the U.S. Department of Education's National Center for Educational Statistics, which included a national representative sample of 26,432 U.S. 8th grade students. Arbona and Nora found that students enrolled in rigorous academic courses were 46% more likely to have enrolled in

college than were students enrolled in vocational or general tracks. Fry (2005) attributed the increase in college attendance of Hispanic students who have taken advanced academic courses to acculturation. That was to say, students placed in an advanced academic track had high educational expectations reinforced by their peers. If correct, Arbona and Nora's research helps explain the low proportion of the Hispanic population with a college degree. Arbona and Nora also compared college enrollment of Hispanic youth and determined that Hispanic students were the least likely to enroll full time and to remain enrolled. This further explained the disproportionate representation of Hispanics with a college degree because a strong predictor of college success was the successful completion of a rigorous course selection in high school.

Fry (2005) also upheld Martin et al.'s (2005) findings that the SES of the student population in schools affected the academic achievement of the individual students. According to Kennedy et al. (2007), in a study of 303 public high schools in New Jersey between 1999 and 2003, SES was the strongest predictor of college ambitions for high school students. The research by Kennedy and colleagues omitted private schools because the state neither tracked their resources nor held private schools accountable to the same standards as public schools.

Likewise, Lewis and Cheng (2006) found the minority student population of the school, in addition to SES, was a possible indicator of educational aspiration. Lewis and Cheng deemed the educational experiences of low SES and Hispanic students quite different from their European American, middleclass counterparts. Indeed, Lewis and Cheng, in their study that consisted of data obtained from the National Center for

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Educational Statistics (NCES), utilized participation in the school lunch program as an indicator for SES. Lewis and Cheng's pool of 665 out of a possible 13,638 respondents provided a smaller percentage, 33.3%, than what was recommended for a logistic regression by Babbie (1998). Lewis and Cheng used a five point Likert scale ranging from (1) very little to (5) very much to ask principals to rate the importance of curricular items such as perceived community level income, percent of students on the subsidized meal program, and the percent of minority students enrolled in the school. Their study cited several concerns that limited the ability to generalize the results to other populations. First, the survey relied solely on principals' estimation of certain student characteristics such as poverty, which may have missed latent SES variables. In addition, the study cited low representation for a total of five urban schools, thus further limiting the ability to generalize to urban schoolchildren, as it was possible that urban schools may have differed from rural schools in student population.

A possible explanation for the differences in curricular selection between Hispanic and non-Hispanic students offered by Martin et al. (2005) was that these students were less able to afford college tuition which therefore reduced their motivation to register for advanced academic and college preparatory classes. However, Arbona and Nora (2007) contradicted the literature by Martin et al. that financial restraints kept Hispanic students from engaging in higher education. Arbona and Nora noted that financial restraints were not predictors for Hispanic students that attended either a two-year or a four-year institution. Additionally, Andres et al. (2007) and Rumberger and Palardy (2005) linked a possible explanation for the lower academic achievement of

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Hispanic students to the low SES of Hispanic parents. According to Andres et al., who used the only Canadian longitudinal study of its kind, the Pat High School on Life's Way Project of British Colombia, higher SES parents had the requisite skills and information necessary to make postsecondary opportunities available to their children. Andres et al. revealed the inability of low SES and Hispanic parents to communicate with the teaching staff. Rather than the views of lower SES parents that viewed the educational professional staff as experts, higher SES parents communicated with the educational professionals as partners. This difference between the views between lower and higher SES parents accounted for the increased expectations of higher SES parents and their ability to communicate those expectations to the teaching staff, thereby providing higher SES students with a better quality education.

In addition, Battle and Pastrana (2007) found increased speaking and writing skills in higher SES parents; higher SES parents had the ability to allocate necessary resources to educational endeavors that increased the academic performance of their children. Battle and Pastrana and Rumberger and Palardy (2005) further established a positive relationship between income and academic attainment. A review of their research showed Hispanic and linguistically isolated students were more likely to be poor and attend a lower SES school than were their European American counterparts (Rumberger & Palardy, 2005). Similarly, Hoy et al. (2006) referred to the landmark study, Equality of Educational Opportunity of 1966, commonly referred to as the Coleman Report, as overwhelming evidence of the strong association between SES and academic achievement. In their research on 96 non-randomly selected high schools in an

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undisclosed Midwestern state, Hoy et al. hypothesized one of the reasons for increased academic achievement of higher SES students was the increase in what the researchers referred to as academic optimism. Even before the Coleman Report of 1966, Becker (1964) theorized an economic model that estimated academic attainment based on income.

The research on education and poverty maintained that students who were economically disadvantaged tended to have negative attitudes about school, had lower grades and test scores, and were more likely to drop out (Reyes & Capper, 1991). The school attendance of low SES minority children was one possible explanation for the relationship between academic achievement and poverty. Nichols (2003) analyzed the attendance data of students from low SES and middleclass families and determined that low SES students experienced lower school attendance. He postulated the public educational system failed student populations, namely poor, Hispanic, and LEP students.

A summary of the literature showed a relationship between SES and academic achievement, although SES did not explain 100% of the academic gap between Hispanic students and their middleclass counterparts. Indeed, the academic course offerings of high schools with a high SES student population partially explained the education gap between Hispanic students and their middleclass peers. Additionally, the post-secondary aspirations of high school students reflected SES as seen in the research by Kennedy et al. (2007). Lastly, the literature also tied SES to race and ethnicity. Certainly, the hypothesis that SES predicted academic achievement had existed since the 1960s, when Becker (1964) developed an economic model to estimate academic attainment.

SES, High Stakes Testing, and NCLB for Hispanic LEP Students

As the review of the literature indicated a relationship between SES and academic achievement, it also suggested a relationship between SES and enrollment in LEP for Hispanic students. Indeed, researchers such as Perna (2005), Chen (2008), Kennedy et al. (2007), Lewis and Cheng (2006), and Rumberger and Palardy (2005) used race/ethnicity as part of a composite construct for SES. According to Lewis and Cheng, "race was embedded in SES" (2006, *p*. 91). Warren and Edwards (2005) and Warren and Jenkins (2005) affirmed that the effects of race/ethnicity and low SES was most devastating in states with high poverty rates, increased minority rates, and states with high stakes testing such as Texas and Florida.

Due to the No Child Left Behind Act of 2001 (NCLB) in states with high stakes testing, teachers tended to be more controlling, which resulted in a less desirable classroom for students who were extrinsically motivated (Stevens et al., 2006). These researchers concluded that Hispanic students tended to be more extrinsically motivated and the effect of high stakes testing disenfranchised Hispanic students. Stevens et al. surmised that because Hispanic students appeared to be extrinsically motivated, they stood to lose in states with high stakes testing because of the effect these tests had on the classroom teacher. Stevens et al. derived their data from convenience-sampled schools in west and south Texas. Stevens et al. randomly selected the 666 4th to 10th grade participants based on their representation of their school populations in age, race, ethnicity, and gender. The authors adequately described the statistical analysis used in the study to replicate for future studies. Likewise, the authors adequately described the

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results to compare to future studies. However, there were limitations to this study because of its limited participant sample. The sample was not representative of any school or school district because the sample was not randomly selected. Rather, the sample was selected based on the location of the schools. Further, the analysis relied on subjective self-evaluation from students, parents, and teachers, thereby providing many opportunities for participants to skew the results. The study provided for a theoretical model to evaluate math performance based on emotion, motivation, and condition; however, the researchers acknowledged that these variables might not be appropriate to measure mathematics performance. The majority of the participants were in either 4th grade (133), 8th grade (393) or 10th grade (71), which left 69 students divided by four additional grade levels, or approximately 17 students from the 5th, 6th, 7th, and 9th grades, thus providing too small of a sample to conduct meaningful statistical analysis for these grade levels. Lastly, the authors reported that a cross-validation yielded a poor model to fit for the Hispanic population, further reducing the ability to generalize these results to other populations.

States that required passing a high stakes test in order to graduate placed Hispanic and linguistically isolated low SES students at a disadvantage, as was evident in Texas and Florida. According to Warren and Jenkins (2005), from data obtained from the Current Population Survey conducted by the Bureau of Labor, there was a high relationship between school retention at grade level and the dropout rate. A review of literature found high stakes testing most negatively affected Hispanic and low SES students (Schiller & Muller, 2003; Warren & Edwards, 2005; Warren & Jenkins, 2005).

Supporting the assertion that high stakes testing contributed to the dropout rate for linguistically isolated low SES and Hispanic students, Schiller and Muller analyzed the Carnegie units, high school credits, of low SES Hispanic students in states with extensive testing and determined that low SES Hispanic students had, on average, almost one year's less math credit than their European American counterparts. Similarly, Battle and Pastrana (2007) observed that as the SES of students increased, so did the standard test scores for high school seniors. Adding to the literature that illustrated the effects of high stakes testing, Warren and Edwards found that students from low SES families who failed the 8th grade high stakes test to enter high school were increasingly more likely to drop out of high school than were middleclass students. In spite of the empirical data that cited the relationship between high stakes testing and the dropout rate, there seemed to be a public perception that raising the passing scores for high stakes testing would promote academic gains for students (Solochek, 2008).

Prolific writers and researchers on the subject of poverty and education such as Meier et al. (2004) addressed issues of poverty between Hispanic LEP students and NCLB. One of the broad goals of NCLB was to address the achievement gap of underachieving students and their racial/ethnic and social counterparts. Meier and colleagues argued that NCLB punished schools with a high proportion of Hispanic LEP students and therefore created a financial incentive for schools with a disproportionate minority population to drop Hispanic LEP students from their school rosters to raise the test scores of schools and make Adequate Yearly Progress (AYP). Indeed, a single Hispanic LEP student could cause a school not to meet AYP. This was especially true for

schools with a disproportionate representation of Hispanic and LEP students. Meier et al. found that the more diverse the population, the more the school was at risk of not meeting AYP because each subgroup, such as Hispanics and LEP students, must meet the same standard as schools that were more affluent with a more homogeneous population. Meier and fellow researchers also addressed the financial inequities of NCLB with respect to funding schools. According to these authors, federal statistics showed disproportionate numbers of Hispanic LEP and low SES students in more crowded classrooms with fewer certified teachers, counselors, and school supplies such as books and computers. According to Meier et al., NCLB had not addressed societal issues such as health insurance, nutrition, housing, and other variables, widening the education gap between Hispanic LEP and low SES students and their middleclass counterparts.

In summary, the literature further tied low SES to Hispanic students, specifically Hispanic LEP students. The composite construct for SES included race and ethnicity. Further, the greater the minority population, the greater was the effect of SES in states with high stakes testing, such as the Florida high stakes test, the FCAT (Florida Comprehensive Assessment Test). Schools with a disproportionate Hispanic LEP population also had more difficulties meeting the requirements of NCLB, known as AYP. Lastly, although logic would dictate that the neediest would receive the most help, researchers such as Meier et al. (2004) concluded that the poorest students, namely Hispanic LEP students, received the least in terms of certified teachers and classroom supplies, and were placed in more crowded classrooms than were their more affluent counterparts.

SES Hispanic LEP Students, and the School Community

Martin et al. (2005) and Rumberger and Palardy (2005) concluded that, because housing patterns were segregated into minority and SES clusters, so, too, schools were segregated by housing patterns. Thus, segregated schools experienced higher concentrations of academically disadvantaged students (Rumberger & Palardy). In their empirical research, Rumberger and Palardy found that in the year 2000, approximately 70% of Hispanic LEP students attended predominately minority majority schools. Similarly, Fry (2005) noted that Hispanic children were more likely to attend overcrowded and lower SES high schools with a higher student-teacher ratio than were African American or European American children.

An additional pattern prevalent in schools with a disproportionately low SES and high student Hispanic LEP rates was course offerings. Lewis and Cheng (2006) found schools located in less affluent communities tended to offer more vocational education and fewer advanced placement and college preparatory classes than schools located in areas that were more affluent. They also postulated that the students' Hispanic LEP and SES status affected the academic expectations of the educational staff. Rumberger and Palardy (2005) asserted that teachers in high poverty schools responded to Hispanic LEP and low SES students with a less demanding curriculum and teachers in Hispanic LEP and low SES schools had lower expectations than those in predominantly European American middleclass schools. Simply stated, students attending low SES schools had lower academic achievement than did students with comparable backgrounds attending middleclass schools, according to Rumberger and Palardy. These researchers also

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postulated that students from advantaged backgrounds attending a lower SES school would be successful, regardless of the characteristics of the school. Rumberger and Palardy further noted that less-qualified teachers, those teaching outside of their area of certification, taught low SES minority students as compared to qualified teachers instructing higher SES students. Lewis and Cheng believed that the students' SES determined both the educational track and the economic future of the graduate. Lewis and Cheng pointed to the school's academic focus, staff efficacy, and the educational staff's trust in parents, as the three main school organizational factors that influenced student achievement. Likewise, Hoy et al. (2006) also supported Lewis and Cheng's explanation that the academic focus of the school played a great role in determining student achievement.

The study by Sus et al (2007) used data obtained from a national sample of approximately 9000 youth ranging from 12 to 16 years of age. Sus, Houston, and Suh cited poor academic achievement, school suspension rates, low SES, and Hispanic status as strong predictors of the dropout rate. These researchers additionally cited the educational attainment of single mothers as being a strong predictor of the high school dropout rate for low SES and Hispanic students. However, a closer review of the study revealed that using a partial correlation explained less than 3% of the variance for students who dropped out of school when taking into account their mothers' educational attainments. Indeed, the greatest variance for dropout rates, 3%, was explained by the independent variable, first sexual experience occurred at age 15 or below, with the remaining 19 variables decreasing in their ability to explain the variance in the dropout

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rate. In all, the authors researched 20 different independent variables to explain students' low GPA, out-of-school suspensions and low SES.

A summary of the findings indicated the SES of the community reflected in the SES of the school. Further, as communities were segregated, so too did SES and ethnic housing patterns segregate schools. An additional pattern witnessed in high Hispanic LEP schools in less affluent communities was the increase in vocational and less academically demanding course offerings along with the decrease in less challenging courses, followed by lower teacher expectations.

SES, Hispanic Students, and LEP Programs

Researchers such as Arbona and Nora (2007) and Naglieri et al. (2006) have surmised that the low achievement of Hispanic children was further exacerbated by the level of parental education as shown by the vocabulary scores of Hispanic children. Naglieri et al. suggested that tied to the academic achievement of ethnic children was parental education. The research by Naglieri et al. illustrated that their sample of Hispanic LEP students came from predominantly working class families with limited English speaking skills and little educational training. These researchers compared Hispanic children to non-Hispanic children and concluded that both Hispanic and non-Hispanic children whose parents had limited education had a lower vocabulary score as compared to children with a higher vocabulary score for both Hispanic and non-Hispanic children whose families were well educated. Barlow's (1990) analysis showed that almost 20% of minority children were living in poverty. Barlow's findings supported the research by Thornton, Collins, and Daugherty (2006) that linked SES to the education

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gap, low birth weight, emotional stress, and unwed childbirth in school-aged children. Barlow suggested that insufficient exposure to books, intellectually stimulating toys, and activities found in middleclass homes was one possible explanation for the lower verbal and cognitive skills in minority adolescents. Furthermore, Barlow cited increased stress and lower self-esteem of teenaged children in lower SES families.

Carpenter et al. (2006) suggested that SES and inclusion in an LEP program yielded similar outcomes for mathematics achievement. These authors observed that as SES increased, so too increased math achievement and educational attainment. Similarly, an increase in LEP participation yielded a decrease in mathematics achievement and learning. The issue of mathematics achievement was of particular concern for researchers such as Burris et al. (2006), whose quasi-experimental research on six middle school cohorts from 1995 through 2000 observed that mathematics attainment for high school students was a stronger indicator for college completion than grade point average (GPA) or SES. Burris and colleagues further extrapolated that Hispanics and students on the subsidized lunch program were underrepresented in upper level math classes. Buttressing the research by Burris and fellow researchers, Martin et al. (2005) provided evidence to suggest that the lack of college information and college preparatory classes offered in the more affluent schools hampered Hispanic enrollment in college. Another factor for the decreased academic achievement of the Hispanic population explored by social science researchers, such as Battle and Pastrana (2007), was the second language acquisition processes of many Hispanic students.

To summarize, the literature showed relationships between SES and inclusion in LEP programs and mathematics achievement scores. In other words, as SES increased, so did mathematic achievement scores. Likewise, as participation in LEP programs increased, math achievement scores decreased. The math achievement scores for high school students were of interest for those concerned with college enrollment, as high school math attainment was a more reliable predictor of college completion than GPA.

SES and Ethnicity as a Variable of Academic Achievement

Certainly, there was much literature that illustrated the relationship between race/ethnicity and educational achievement. According to Naglieri et al. (2006), 27% of Hispanics above 25 years of age had less than a ninth-grade education, compared to 4% for European Americans. As demonstrated in their research, Hispanics were less likely than were their European American counterparts to graduate from high school (Naglieri et al., 2006).

Weaver (2005) estimated Hispanic parents were not only younger than their African American and European American counterparts were, but also less educated and thus, less likely to hold a white-collar job. Johnson (2007) supported Weaver's assertions: derived from the U.S. Census report, the Hispanic dropout rate exceeded the dropout rate of African American and European American children. In his critical review of Title I, Title IV, No Child Left Behind, and Supreme Court Decisions, Johnson noted that African Americans had the highest graduation rate in 1954 and predicted to replace the African American graduation rate with the highest terminal dropout rate were Hispanics (2007).

The role ethnicity played in academic achievement in the Hispanic LEP population was not clear. The literature noted a disproportionate percentage of Hispanic LEP students in special education courses (Naglieri et al., 2004; Naglieri et al., 2006). In their research, Raver et al. (2007) argued that the gap in education for Hispanic children began in elementary school. Raver et al. advanced the hypothesis that the education gap paralleled the racial/ethnic and economic gap among Hispanic children and their counterparts. These researchers further concluded the gap faced by Hispanic children went beyond the school grounds and extended into neighborhood resources. Raver and colleagues cited one of the difficulties with interpreting their results was the complexity of their model. Based on a nationally representative sample of 21,260 children, they concluded that investment of resources and time was a stronger indicator of educational achievement for Hispanic children than for non-Hispanic children. These authors used a complex model of association among school readiness variables and family factors to include income, material hardship, and parenting to test for in-equivalences. The authors acknowledged the likelihood of errors when testing for measures of parenting behaviors equivalently across participant groups. An additional concern with this study was that it was not possible to discern the sample size. Rather, Raver and colleagues quantified the participants by percentages, but did not provide a clear quantification of N. The authors cited that on average, they sampled 23 kindergarteners from each school sampled; however, the research did not provide the total number of schools used in the study, making replication of the study unfeasible without additional clarification of the participants. Raver and colleagues derived the original 21,260 pool of potential

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participant from a nationally representative sample. Although the lack of sample data compromised the validity and ability to generalize the study, the authors' findings were in line with other research that addressed the relationship between economic struggles and academic achievement.

Although the Hispanic population had experienced an increase in student enrollment, Hispanic students had not experienced an increase in the high school graduation rate (Stevens et al., 2006). Thus, the education gap further reflected the high school dropout rate for Hispanic students. The research by Weaver (2005) characterized the social capital and educational attainment of Hispanics as different from European Americans. Indeed, in the area of educational attainment, researchers such as Coatsworth, Duncan, Pantin, and Szapocznik (2006) used ethnicity as an indicator to explain academic achievement. Although Coatsworth et al. (2006) used ethnicity as an indicator for retention, Willson and Hughes (2006), using a small sample of 283 Hispanic first graders from three school districts in Texas and following school retention, found Hispanic children fared worse than did African American children and that both African Americans and Hispanics fared worse than European Americans in post academic retention. Social demographics were stronger predictors for academic retention for Hispanic children than for African American and European American children (Coatsworth et al., 2006).

Academic distracters such as bullying were most closely associated with grade-level retention in the minority student population. In their findings, Peskin, Tortolero, and Markham (2006) analyzed the participation rates of bullying among African Americans,

European Americans, and Hispanics, and concluded that in their sample minority students reported greater participation in bullying than their European American counterparts. In their research, Perkin et al. (2006) concluded that of the three levels of bullying (victims, bullies, bully-victims), Hispanic students self-reported more participation in all forms of bullying than did their European American counterparts. The data by Perkin et al. were derived from five middle schools and three high schools in a large disproportionately minority school district whose student populations were predominantly minority and Hispanic LEP students, and eligible for the subsidized lunch program. The U.S. Department of Justice, Education, and Health and Human Services provided the funding for this research.

Minority students were disproportionately represented in special education programs as well (Naglieri et al., 2006; Naglieri et al., 2004; Raver et al., 2007). For these researchers, part of the discrepancy in the disproportionate representation of minority students in special education programs was due to the traditional I.Q. test that focused on verbal ability and therefore negatively affected Hispanic LEP students, and students who did not speak standardized English (Naglieri et al., 2006). One alternative suggested by Naglieri et al. (2006), based on their study of 2,200 students tested by trained professionals during the Cognitive Assessment System process in 1997, was to use non-verbal tests of intelligence. Naglieri et al. (2004) also made a similar recommendation to use alternative intelligence testing in their research based on the achievement scores of 148 Hispanic children receiving LEP services compared to 148 Hispanic children who did not receive LEP services. In this research, the authors

concluded that Hispanic children who have received LEP services did not score significantly different from Hispanic children who had not received LEP services, as both groups scored in the lower half of the achievement test. In such tests of intelligence as the Planning, Attention, Simultaneous, and Successive (PASS) theory of intelligence, Naglieri et al. (2006) concluded that there were no mean statistical differences in intelligence among African American, Hispanic, and European American students. Using alternative testing, Raver et al. concluded that measures of math and general knowledge scores adhered in similar fashion for African American, Hispanic, and European American students.

In summary, academic achievement and educational attainment for Hispanic students was below that of both African American and European American students. In addition, Hispanics had the highest terminal dropout rate. Researchers also found that special education classes disproportionately represented Hispanic LEP students. Many researchers used the Hispanic student population as an indicator of school retention (Coatsworth et al., 2006). Furthermore, Hispanic students fared worse than did African American students and both fared worse than did European American students in post school retention. The research also cited parental educational level as a strong predictor of school retention and demonstrated that higher levels of parental education led to lower levels of school retention.

SES, Hispanic LEP Students, and Educational Attainment

Reyes and Capper (1991) investigated the student dropout rate within the Hispanic community. The study cited numerous factors for the student dropout rate

including the students' SES, family and neighborhood characteristics, peer pressure, and lack of effort and motivation. However, as the study revealed, this was insufficient to explain the entire dropout rate within the Hispanic LEP population. Social scientists suggested that there were other factors to take into consideration regarding the dropout rate. The literature suggested that schools contributed to the dropout phenomenon through curriculum characteristics, safe school environment, and teacher-student relationships among other factors (Hoxby, 2002; Ingersoll, 2004; Kahlenberg, 2000). Hispanic LEP and poverty issues were enormous hurdles for teachers and administrators. Kahlenberg (2000) validated that low SES and LEP students were at a greater disadvantage than were students in middleclass schools. His findings suggested that LEP students fared better in schools with a higher SES student population.

Wilkins (2006) acknowledged that reading and math were among several key factors that kept Hispanic students from moving forward in the educational system. His research found that by the 4th grade, 88% of Hispanic students were reading below grade level as compared to 60% of European American students; by 8th grade, 90% of Hispanic students were below grade level in math. Wilkins's findings further illustrated the education gap of minority students by comparing the educational level of 17-year-old Hispanic students to middle school age European American students. In his research, Wilkins studied the matriculation of minority students in advanced math classes, such as trigonometry and calculus, and determined that the potential for earning a university degree increased by 50% for minority students enrolled in advanced math classes. Stevens et al. (2006) supported Wilkins's findings, which noted advanced mathematics

course matriculation was explanatory of college enrollment. Wilkins found that the combination of reading, math, and high stakes testing explained up to 50% of the dropout rate for minority students. These findings illustrated the impact of poverty and educational quality on the dropout rate.

The education gap did not stop at the high school. Hispanics were less likely to graduate from college than were their African American and European American counterparts (Arbona & Nora, 2007). Arbona and Nora estimated only 6% of Hispanics had completed a college degree six years after attending a junior college, as compared to 44% of Hispanics attending a four-year institution who graduated within the same six year period. Thus, Arbona and Nora concluded that the junior college was not a steppingstone for completing a four-year degree. Like many researchers, Arbona and Nora used NELS: 88-2000. They selected from a nationally representative sample of 26, 432 8th grade students. For their survey, Arbona and Nora selected 517 Hispanics from the 8th grade cohort who enrolled in a two-year community college and 408 Hispanics from the 8th grade cohort who enrolled in a four-year college or university from 925 Hispanic participants who received a follow up survey. Arbona and Nora used 17 independent variables to conduct their logistic regression analysis used to explain the significance of the dependent variables used in the study. Compared to other researchers who used NELS to conduct their statistical analysis, the research by Arbona and Nora was among the least complicated. Their summary of the results was easy to interpret and presented in an unbiased tabular form. Further, the authors did not speculate as to the

significance of the results, but rather simply reported the information as represented by the regression analysis.

SES Characteristics of Disproportionately Hispanic LEP Schools

What was a disproportionately minority school? How did disproportionately minority schools differ from schools with a low minority and Hispanic LEP student population? Generally, both disproportionately minority and non-disproportionately minority schools had a relatively high poverty rate as marked by free and reduced-cost lunch data; certainly, poverty was a feature of both rural districts as well as disproportionately minority districts, as was low student achievement (Jacob, 2007; Reyes & Capper, 1991).

Disproportionately Hispanic schools, however, also had a high proportion of Hispanic students who were in LEP programs (Meier, et al., 2004; Reyes & Capper, 1991; Viadero, 2000). These schools were located in large central cities rather than in rural settings, small towns, or suburban areas (Russo, 2004). A single-race student population, which was usually Hispanic LEP and low SES students, defined disproportionately minority schools (Tillman, 2005).

Disproportionately Hispanic schools lacked certified teachers, especially Hispanic teachers. The combination of an uncertified and non-diverse teaching staff presented a concern unique to disproportionately Hispanic LEP schools. Due to the challenges faced by the community, disproportionately minority school districts had lower teacher retention, higher percentages of alternatively certified teachers, lack of educational resources and support, higher dropout rates, higher percentages of Hispanic LEP students,

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and a higher percentage of low SES students (Meier, et al., 2004; Reyes & Capper, 1991; Tillman, 2005; Viadero, 2000). Teachers in disproportionately minority schools taught many of the nation's minority students, many of whom were in LEP programs. The share of students classified as LEP was twice as high in central cities as it was in suburbs.

The literature showed that teacher shortages in disproportionately minority districts made it more challenging to employ qualified teachers; thus, the hired teachers were often less qualified and less experienced than teachers in school districts with a low Hispanic population (Barth, 1990; Brennan & Bliss, 1998; Ingersoll, 2004; Jacob, 2007). Both disproportionately minority and non-disproportionately minority schools had difficulties staffing teaching vacancies, but disproportionately minority schools were more likely to have vacancies in critical areas such as math and science. Moreover, disproportionately minority schools with a disproportionate LEP student population were substantially more likely to fill these vacancies by hiring substitutes or hiring less qualified teachers (Ingersoll, 2004). An additional reason for the teacher shortages was the lack of teachers willing to teach in the schools with the neediest of children (Zeichner, 2006).

Certainly, numerous researchers had established a link between low SES and academic performance (Attewell & Domina, 2008; Battle & Pastrana, 2007; Burris, 2006; Carpenter et al., 2006; Chen, 2008; Lewis & Cheng, 2006; Martin et al., 2005; Meier et al., 2004; Perna, 2005; Schiller, 2003; Warren & Edwards, 2005; Warren & Jenkins, 2005). The effects of poverty on the IQ scores of Hispanic and low SES students were well-documented (Duncan, 1994; Naglieri et al., 2004; Naglieri et al., 2006). Duncan

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asserted that poverty was especially hard on the Hispanic population that lived in lower

SES neighborhoods. The research on education and poverty maintained that students who

were economically disadvantaged tended to have negative attitudes about school, had

lower GPAs and test scores, and were more likely to drop out of school (Reyes & Capper,

1991).

The school attendance of lower SES children was one possible explanation for the

relationship between academic achievement and poverty. Nichols' (2003) analysis of

data, surveyed from lower SES students, revealed that lower SES Hispanic students had

more school absences than did their middleclass counterparts. Additionally, Fletcher's

(2002) findings, based on the 1988 NELS survey, supported other researchers who cited

that middleclass parents participated in the educational process more than did their lower

SES counterparts. Fletcher found that students whose parents participated in educational

processes had fewer school absences. Likewise, Kahlenberg's (2000) research supported

Fletcher's findings that showed that middleclass parents were more likely than were

lower SES parents to participate in school functions such as volunteering in the

classroom and joining the PTA.

With respect to Hispanic parents, in a great many cases, Hispanic families lack

certain essential resources for effective parenting (National Council of Juvenile and

Family Court Judges [NCJFC], 1994). In their research, Drummond and Stipek (2004)

found that most parents valued involvement in their children's education. However,

lower income parents explained that they had less time to meet the school's expectations

and were limited in meeting the basic needs of their children, such as emotional needs,

clothing, and socialization. It was worthwhile to note more than just family members influenced academic achievement. School peer interactions also influenced academic achievement (Hanushek, Kain, & Rivkin, 2004). Armor (2006) argued that family characteristics influence children long before they begin school. Family characteristics lasted through children's school years and helped explain the achievement gap between racial and ethnic groups. Researchers, such as Kahlenberg (2000), found that impoverished children were more costly to educate, on average, than were children from middleclass families. Kahlenberg also noted students in high poverty schools received less resources such as books, computers, and advanced curriculum than did their middleclass counterparts.

Alexander and Salmon (2007) used a comparison of international test scores to determine the quality of schools. In their analysis, they determined poverty negatively affected both disproportionately minority and non-disproportionately minority schools by overburdening the schools' fiscal resources. What mattered more than the per capita expenditures on Hispanic students was the presence of middleclass culture and values. The school community, students, parents, and teachers propelled school quality (Kahlenberg, 2000). Again, according to Kahlenberg, a key determinant in school success was parental involvement. It was important to note that in a review of the literature the researchers did not blame the family for poor student performance. Instead, Wilkins (2006) cited an inadequate educational system that poorly prepared Hispanic and low SES students for poor student performance.

In summary, Russo (2004) found that schools with a disproportionately Hispanic LEP student population were often located in larger, less affluent central cities rather than rural settings. There was a contrast between disproportionately minority schools and middleclass schools. Local and national research have surmised that impoverished students and middleclass students did better in middleclass majority schools than did their counterparts in low SES schools (Kahlenberg, 2000). According to Kahlenberg, certified teachers, advanced course offerings, well-behaved and more motivated peers, and more active and influential parents marked middleclass schools. On average, teachers in high poverty, disproportionately Hispanic schools were more likely to teach out of field and be less qualified than teachers in middleclass schools. In addition, Kahlenberg postulated that teachers in poorer schools had lower expectations. He cited a national study of Title I schools that showed grade inflation in high poverty schools. The combination of uncertified teachers and teachers of color presented a concern unique to disproportionately Hispanic schools. The research suggested that a shortage of certified teachers in disproportionately Hispanic schools and schools that served large numbers of minority and low-income students (Meier, et al., 2004). Even for the certified teachers working in a high poverty school taking a stance on the achievement gap was challenging. The research indicated that the quality of a teacher was the paramount factor in the academic achievement of students, even more so than the out of school factors such as the earning potential and educational level of the parents (Brennan & Bliss, 1998; Jacob, 2007). The challenges in hiring certified teachers, especially Hispanic teachers, to

serve as role models was partly due to the disproportionately minority districts' hardship in attracting, hiring, and retaining teachers (Brennan & Bliss; Jacob).

SES and Acculturation for Hispanic LEP Students

The trend for Hispanic families was a process of alienation whereby Hispanics felt a sense of social, political, economic, and linguistic isolation, which lead to a sense of powerlessness in the educational process for the linguistically isolated Hispanic population (Johnson, 2007; NCJFJ, 1994). Indeed, minorities were over-represented in the group with the least economic, social capital, and political resources. Wilkins (2006) asserted that the educational system failed its responsibility to educate the poor and minority youth in disproportionately minority schools. Wilkins acknowledged that the longer Hispanic children were in school, the greater the achievement gap between them and their European American counterparts.

Additionally, Battle and Pastrana (2007) cited acculturation issues as a negative factor affecting student academic achievement. In their April 2005 pilot survey, conducted in a large high school with a disproportionate number of Hispanic students from southern California, comparing median household income and school communities, Unger et al. (2007) associated acculturation with health and social capital outcomes for Hispanic high school students to include drug and alcohol abuse, violence and suicide. Unger et al. defined acculturation as an interchange of behavior and cultural attitude when persons from different communities and backgrounds interacted with each other. The stress associated with acculturation among the immigrant community promoted feelings of isolation among the Hispanic population as evident in the research by

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Coatsworth et al. (2006). Their research focused on 143 African American and Hispanic

families assigned to an intervention program, randomly selected from three secondary

inner city schools in a southeastern city. In his research, Johnson (2007) found that

Hispanic immigrants had a disproportionate mobility rate as compared to their

nonimmigrant counterparts, which may have lead to the perceptions of isolation among

Hispanic immigrants. Although many of the researchers wrote about the benefits of high

levels of acculturation, Bear and Schmitz (2007) noted that low levels of acculturation

among Hispanic families were associated with families that were more cohesive.

However, other researchers, such as Arbona and Nora (2007), noted positive

associations between acculturation and academic achievement. For example, they noted

that when Hispanic students associated and socialized with college bound students, the

academic achievement of Hispanic students increased. These researchers further

espoused that peer association with a friend with similar college aspirations was a

motivating factor in college plans for Hispanic students. Thus, Arbona and Nora

recommended a cohort approach for Hispanic students as a tool for educational

attainment. This assertion supported the hypothesis that academic tracking facilitated

peer association (Arbona & Nora). Indeed, Arbona and Nora believed that by the tenth

grade, Hispanic students with college aspirations identified others in their peer group

with similar academic goals and together, planned for their academic future.

Likewise, Baer and Schmitz (2007) reported that more acculturated, educated

Hispanic families promoted their children entering the European American middleclass

than did their non-acculturated counterparts. Based on their research, Baer and Schmitz

believed that linked to SES was language usage and a marginalized social capital. Likewise, they also believed that the more highly educated Hispanics were more likely to participate in the middleclass culture. Indeed, Baer and Schmitz surmised that the more acculturated, more educated, more affluent first generation Hispanic Americans were less likely to speak Spanish fluently. Additionally, Arbona and Nora (2007) noted Hispanic students were more likely to attain a college degree if their parents expected them to attend college. However, Arbona and Nora noted parental education and expectation had little play on whether the student selected a four-year versus a two-year institution.

Battle and Pastrana (2007) found that low SES Hispanic parents expected their children to translate both linguistically and culturally for non-English speaking family members. The role of family translator added additional social, legal, and financial concerns normally not faced by children, thereby distracting Hispanic children from their academic endeavors. The findings from Battle and Pastrana also revealed that even when the SES of the Hispanic population rose, their academic achievement levels remained lower than that of their European American counterparts. Battle and Pastrana believed that the increase in SES by the Hispanic population was due to an increase in exertion in the work force such that their efforts drew the Hispanic family away from educational activities that promoted higher academic achievement. Stevens et al. (2006) found that Hispanics were a vital source of low skilled, low wage, agricultural, and other forms of labor, further buttressing the research by Battle and Pastrana. In addition to lower status and professional opportunities, Hispanics also experienced almost twice the unemployment rates of their European American counterparts (Stevens et al.).

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In a similar finding, Johannessen (2003) observed the plight of linguistically isolated children as a key factor for their diminished level of academic achievement. Johannessen noted that linguistically isolated families drew disproportionately from low SES families. Indeed, in his research, Weaver (2007) cited Hispanics as having a lower social capital, less education, lower income, less professional positions, and higher rates of poverty than their European American counterparts. Battle and Pastrana (2007) and Raver et al. (2007) acknowledged that the Hispanic population was a greatly varied population, but categorized them into one ethnic classification for their research. For example, Raver and colleagues considered Cubans, Mexicans, and Puerto Ricans as Hispanics. The documented variables of the Hispanic population in the research by Wilson and Hughes (2006) supported the considerable variation of the Hispanic population. Coatsworth et al. (2006) also noted that the variables affecting the academic achievement, retention, and intervention of Hispanic students varied greatly across different Hispanic subgroups.

In summary, Hispanics were not just isolated linguistically, but also socially, politically, and economically. Acculturation issues helped explain some of the reasons for the lower academic achievement of Hispanic LEP students. Economic stress for linguistically isolated families was an additional factor cited for lower academic performance of Hispanic children. However, the literature also cited positive aspects associated with acculturation associated with academic achievement. The researchers noted that more educated and acculturated families promoted entrance into the American middleclass by encouraging their children to pursue higher educational attainment.

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SES, Hispanic LEP Students, and Contradictions in the Research

Although a review of the literature indicated that linguistically isolated and low SES students did not fare as well academically as did their higher SES and European American counterparts, some researchers seemed to contradict these findings. Battle and Pastrana (2007) noted they were surprised to discover that their data showed that when controlling for SES, Hispanics outperformed European Americans 2 years post high school on socioeconomic indicators. Indeed, their research indicated no statistical differences between European American and Hispanic high school seniors when controlling for SES. Battle and Pastrana concluded that SES, not race or ethnicity, was a better predictor of high school completion. Nonetheless, they also found that European Americans, more than minorities, benefited from an increase in SES.

Carpenter et al. (2006) concluded that Hispanics fared as well as their European American counterparts if Hispanics had not been in LEP or similar programs, had an intact home, and had attended a private school. Carpenter et al. further concluded that the two variables, private school attendance and intact homes, were not as strong a predictor of academic success for Hispanics as they were for European Americans. Although Kennedy et al. (2007) acknowledged the role of SES on college aspirations of isolated students; they noted their surprise at discovering that their data yielded no noticeable difference in the college aspirations of upper middle SES minority students. The research by Andres et al. (2007) found that although both low and middle SES parents desired their children to graduate from high school, low SES families focused on completing high

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school whereas middleclass families focused on graduating from high school as a pathway for higher education.

Gender

A review of the literature by Arbona and Nora (2007), Baer and Schmitz (2007), Freisthler et al. (2007), and Perkin et al. (2006) demonstrated that gender and parenthood played roles in the academic achievement and wellbeing of students. Students from college-educated mothers had higher reading scores than did students whose parents did not have college educations. Sus, Houston, and Suh (2007) noted a relationship between single mothers' educational attainment and their children's high school dropout rates. As single mothers' educational attainment increased, so did their children's graduation rates. Arbona and Nora cited that the college aspiration rate for women showed an increase with 33% more likelihood than men to hold a college degree. Further, Baer and Schmitz also added that gender played a role in bilingualism and language use in the home among Hispanic children. Their study indicated that children from more highly educated, bilingual parents had higher educational attainment than did children from less educated parents who were not bilingual. The literature showed a relationship between female-headed households and poverty, unemployment, and the educational attainment of their children. As the income from female-headed households increased, so did the educational attainment of their children.

Conclusion

The purpose of this literature review was to explore the relationship between SES of the school and the academic achievement of Hispanic LEP students as seen through a middleclass education concept. I was primarily interested in peer-reviewed empirical research conducted within the last five years in the United States that addressed the relationship between SES and Hispanic LEP students; as a result, the literature yielded 73 references to help explain this relationship. Critical analyses of eight of these references were selected based on their empirical data as cited throughout the literature.

It was important to consider some of the limitations of this analysis before discussing the conclusions. First, although the literature was rich in the number of peer-reviewed journal articles on the subject of SES, academic achievement, and minority status, few peer-reviewed journal articles existed discussing the relationships among academic achievement, SES, and Hispanic LEP students. Yet another limitation was the conceptual framework used to filter the research question and interpret the literature involved. The middleclass education concept was but one framework; other models might lead to different perspectives. Despite the limitations cited, the literature analyses on these studies revealed several pertinent conclusions.

In addition to being the largest and fastest-growing minority demographic at over 15% of the U.S. population, Hispanics also represented the largest population speaking a language other than English in the home. Further, the U.S. Census (2000) cited Spanish speakers as speaking English less than very well, more so than speakers of other languages. In addition, Hispanics overwhelmingly represented the majority, or 74%, of

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the LEP population. The researchers used race/ethnicity as a conditional variable for researching the relationship between SES and academic success. However, eliminated from the literature due to insufficient sample size were people of Asian and Native American descent and other minority groups. Yet, in other studies, people of Asian descent were included in the European American population. Nonetheless, researchers clearly defined the Hispanic populations, to include all races from Mexico, Puerto Rico, Cuba, and people from Spanish-speaking Central and South America, as Hispanics, thus making Hispanics a diverse population. Therefore, minority status was limited to, specifically, African American, Hispanic, and linguistically isolated persons.

A review of the literature showed no clear definition for SES. Rather, SES was a composite definition using numerous variables. The most common definition of SES used family income, parents' educational attainment, and parents' occupation. Further, the literature also showed there was a relationship between SES and academic achievement. In addition to affecting students directly, SES also influenced academic achievement indirectly by providing low SES students with less qualified, less experienced teachers in schools with less educational materials. The literature reviewed in this paper illustrated how SES played an implicit role in the educational achievement of all children. Specifically, the literature showed a strong relationship of the role SES played in the academic achievement of Hispanic LEP students. Because Hispanics were the largest and fastest-growing minority population, it made sense that Hispanics played an increasing role in the U.S. educational system.

Numerous variables influenced academic success. Acculturation had both a positive and negative impact on academic achievement. The researchers cited positive peer relationships as a motivating factor for Hispanic students when making college plans. However, the researchers cited acculturation for increased substance abuse among minority populations. In addition to the influence of acculturation on academic success, the literature cited similar educational effects of low SES such as lower verbal, math, and literacy skills for all students. The research cited differences in low SES students' educational attainment as witnessed by the college admissions rate of Hispanic high school students. Researchers such as Martin et al. (2005) concluded that ethnicity and linguistic isolation for Hispanics resulted in lower college application rates. Further, the literature also cited the impact of race/ethnicity reflected at the local community college. Arbona and Nora (2007) noted that community colleges enrolled high proportions of minority students, and that Hispanic students had lower transfer rates to the university system than did their African American and European American counterparts.

Lastly, this literature review helped highlight the lack of empirical research available on the role played by SES on the academic achievement of Hispanic LEP students. This literature, as reviewed, helped fill the missing gaps in the knowledge base and stimulated needed research in the area of SES and the academic achievement of Hispanic LEP students for providing positive change in the education of Hispanic LEP children in U.S. schools.

Chapter 3

Research Methods

Overview of Chapter 3

Included in this chapter were sections describing this study's purpose, research

perspective, research context, research data, sample collection instruments and data

collection procedures, variables, research questions and hypotheses, data analysis, and a

summary. The time frame and location of the study were described in detail in the

research perspective section. The research variables were described in the research

participant section.

Introduction

The purpose of this chapter was to describe the research method employed in this

correlational study of the relationship between the FCAT reading and math scores and

school SES, participation in the subsidized meal program, student absences, gender,

GPA, FCAT, and NRT reading and math of Hispanic LEP high school sophomores in

Pinellas County. School SES was defined as a composite variable that included the

proportion of students enrolled in the subsidized meal program and the percentage of

African American and Hispanic students per school. In 2007, all Florida public schools

participated in the FCAT. The FCAT, aligned to the Sunshine States Standards, was the

principle measure of students' reading and math achievement in Florida. All high school students were expected to take the FCAT during their sophomore year and then again in subsequent semesters if they did not pass the FCAT. The sample for this correlational study was Hispanic sophomores in Limited English Proficiency (LEP) programs drawn from the 16 traditional high schools in the Pinellas County School District.

Research Perspective

The research employed a correlation research design. This method helped generalize the findings beyond the population in the Pinellas County School district. There were six predictor variables: (1) school SES; (2) participation in the subsidized meal program; (3) student absences; (4) gender; (5) GPA; and (6) FCAT NRT reading and math scores. The first predictor variable, school SES, was the combined enrollment in the subsidized meal program and the percentage of the minority population, as defined by African American and Hispanic students. The combined percentage of participation in the subsidized meal program and minority enrollment was rank ordered from the largest number, representing a more affluent school, to the smallest number, representing the least affluent school.

The American Community Survey (ACS, 2007) estimated the percentage of Hispanics in New Mexico at 44.1%, California at 35.7%, Texas at 35.5%, Nevada at 24.3%, and Florida at 20.1%. These were the states with the highest percentage of Hispanics. According to the ACS (2007), there were 61,561, 6.7%, Hispanic persons residing in Pinellas County. Of these residents, there were 2,232, 7.3%, Hispanic students

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enrolled in grades 9-12 in the 16 traditional high schools in Pinellas County. Of the 2,232 high school Hispanic students, 833, 37%, were categorized as LEP students.

The traditional 16 high schools were located within eight municipalities: Clearwater, Dunedin, Gulfport, Largo, Palm Harbor, Seminole, St. Petersburg, and Tarpon Springs (see Table 1 for distribution of high schools and magnet programs by cities within Pinellas County, Florida). Additionally, eight high schools also housed magnet programs: Boca Ciega High School, Gibbs High School, Largo High School, Lakewood High School, Pinellas Park High School, Palm Harbor University High School, Tarpon Springs High School, and St. Petersburg High School. Of these magnet programs, Boca Ciega High School, Gibbs High School, Largo High School, Lakewood High School, Pinellas Park High School, and St. Petersburg High School were created as desegregation magnet programs. Because each high school drew primarily from its local municipality and community in Pinellas County, minority representation and SES were not evenly distributed throughout the school district. Rather, concentrated pockets of minority representation and low SES, as represented by participation in the enrollment in the subsidized meal program, were geographically clustered throughout the county. Lastly, Pinellas County had three alternative schools. These include Bayside High School, a credit recovery program, and GED center; Pinellas Secondary School for students who were reassigned for zero tolerance student code infractions, such as drugs or alcohol; and a telecommunication program, Tele-School, in which expelled students may receive limited educational services. Alternative schools provide a different curriculum and had different requirements for completion than did traditional schools. For example,

GED programs did not require a passing score on the FCAT. The alternative schools

provided educational services on a temporary period and were outside the scope of this

study. Therefore, this study focused on the traditional high school programs in which 191

Hispanic LEP sophomores, 8.5% of the Hispanic population who were enrolled in the

same school during the 2006-2007 and 2007-2008 academic years.

Table 1

High School Distribution by City

High School	Magnet Program	City
Boca Ciega High School	Center for Wellness and Medical Professions	Gulfport
Clearwater High School		Clearwater
Countryside High School		Clearwater
Dixie Hollins High School		St. Petersburg
Dunedin High School		Dunedin
East Lake High School		Tarpon Springs
Gibbs High School	Business Economics Technology Academy	St. Petersburg
	Pinellas County Center for the Arts (PCCA)	
Lakewood High School	Center for Advanced Technologies (CAT)	St. Petersburg
Largo High School	Exploring Careers & Education in Leadership (ExCEL)	Largo
Northeast High School		St. Petersburg
Osceola High School		Seminole
Palm Harbor University High School	Center for Wellness and Medical Professions	Palm Harbor
	International Baccalaureate (IB)	
Pinellas Park High School	Criminal Justice Academy	Largo
Seminole High School		Seminole
St. Petersburg High School	International Baccalaureate (IB)	St. Petersburg
Tarpon Springs High School	Leadership Conservatory for the Arts	Tarpon Springs

This study was a secondary data analysis of achievement and school SES, participation in the subsidized meal program, student absences, gender, GPA, FCAT, and NRT reading and math employing archival data collected by the Pinellas County School District on Hispanic LEP students. The Pinellas County School District enrolled over 105,000 students in grades K-12 for the 2007-2008 school year. Of this number, 30,211 students were registered in grades 9-12 in the 16 traditional high schools. The ethnic demographics of the high school students were 1,175 or 3.88% Asian, 5,251 or 17.38% were African American, 2,332 or 7.30% were Hispanic, 91 or 0.30% were Native American Indian, 860 or 2.85% were multicultural, and 20,602 or 68.19% were White non-Hispanic. Overall, 8,635 or 28.58% of the student population participated in the enrollment in the subsidized meal program, including 3,236 or 10.71% African American, 1,151 or 3.81% Hispanic, and 4,248 or 14.06% students other than African American or Hispanic participating in the subsidized meal program.

This study analyzed archival data from the Pinellas County School Board database. Specifically, the archived data investigated were derived from the 2007-2008 school year from the 16 traditional high schools. To protect confidentiality and to insulate the sample from potential stigmatization, the schools were referred to as Schools 1 through 16. School 1 represented the school with the largest percentage of combined students on the enrollment in the subsidized meal program and the percentage of minority students, as defined by African American and Hispanic. For example, school 1 had a minority population of African American (50.9%) and Hispanic (6.3%) of 57.2% plus a

subsidized meal program of 48.42% for a total composite SES score of 105.62. Whereas,

school 16 had a minority population of African American (4.1%) and Hispanic (5.6%) of

9.7% plus a subsidized meal program of 9.3% for a total composite SES score of 19. This

study did not use any identifiers that would link to any individual student in this study,

thereby insuring anonymity for all students. The combination of minority enrollment and

the percentage of students participating in the subsidized meal program provided a

composite measure of SES for the purpose of this study. A preliminary investigation of

the school ranking suggested that there was a relationship between minority enrollment

and participation in the enrollment in the subsidized meal program, as expected from the

literature presented in this study (see Table 2 for school ordered by the composite SES, as

defined by the percentage of Black and Hispanic students and the percentage of students

participating in the enrollment in the subsidized meal program). The combination of

minority status and the subsidized meal program gave a better measure of school SES

than only using one variable such as minority representation or the subsidized meal

program used individually. McLaughlin (2009) cited that ineligible students were

participating in the subsidized meal program. According to his study, the federal

government required school districts receiving federal assistance for the subsidized meal

program to audit at least 3% of the families participating in the program for eligibility.

McLaughlin reported that 52% of the families participating in the subsidized meal

program were ineligible, and therefore, dropped from the subsidized meal program.

Although this was not a scientific study, McLaughlin did provide insight on why

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exclusive dependence on the subsidized meal program may have been a poor indicator of

school SES.

Table 2

Composite School SES = African American + Hispanic +
Enrollment in the Subsidized Meal Program

School	African American	Hispanic	Sub Meal Prg	Composite SES Score
1	50.90	6.30	48.42	105.62
2	44.23	4.90	45.01	94.14
3	48.99	4.56	33.89	87.44
4	17.52	8.92	40.96	67.40
5	11.77	12.51	40.94	65.22
6	14.85	8.30	38.21	61.36
7	14.78	9.87	32.40	57.05
8	11.85	12.64	32.15	56.64
9	23.61	3.81	26.34	53.76
10	16.47	7.09	26.58	50.14
11	8.69	12.03	23.55	44.27
12	6.63	6.52	21.50	34.65
13	4.74	5.63	21.41	31.78
14	4.11	3.37	14.17	21.65
15	4.98	5.21	10.79	20.98
16	4.12	5.69	9.30	19.11

Note. Sub Meal Prg = Enrollment in the subsidized meal program

Instruments Employed in Data Collection

Multiple techniques and data collection processes were employed in this study.

The primary data source was the 2007-2008 SASI system, a data management system

designed and published by Pearson, Inc. for school use. The data encompassed in SASI

included school identification number, student race and ethnic identification, student

language spoken at home, parent language spoken at home, participation in the

enrollment in the subsidized meal program, participation in LEP program, student

absences, and students' FCAT reading scores. An additional data source was the Pinellas County Schools website that provided public access to data on special programs such as magnet programs and academies found that in the traditional high schools, school racial and ethnic demographics, and the percentage of students participating in the enrollment in the subsidized meal program. Additionally, the Pinellas County School website provided direct links to the Florida Department of Education's (FLDOE) website. From this link, the public can access data such as mean FCAT reading scores, FCAT math scores, racial and ethnic demographics, percentage of students participating in the enrollment in the subsidized meal program, school grade, adequate yearly progress (AYP), and average yearly gains.

The primary source of data for this study was the SASI database followed by the Pinellas County School District website and the FLDOE from which racial and ethnic demographic, percentage participation in the subsidized meal program, FCAT reading and FCAT math scores data were obtained. Additional sample data were ascertained, with the Pinellas County School Board's written approval, on specific ethnic category, LEP program participation, FCAT reading scores, and student absences for individual students.

Several procedures were followed prior to accessing information for this study. First, the requirements for Institutional Review Board (IRB) were met in order to grant approval for this study. Because this study used archival data exclusively, and therefore, no participant was interviewed or questioned, an IRB Exemption was requested and approved. Further, no identifying data such as student number, residential address or any

kind of data that can link this study to any individual were used. Additionally, the Pinellas County School District provided a procedure similar to that of the IRB. Once the IRB and district approvals were obtained, the data requested were downloaded into an electronic spreadsheet, Excel 2007, for further manipulation and analysis by SAS 9.1.3., a statistical analysis program.

The Population

The sample selected was Hispanic LEP sophomore students in the 2007-2008 school year that were registered in the same school during the student's freshman year, 2006-2007, in the 16 traditional high schools in Pinellas County. Thus, students who changed schools or were repeat 10th graders were excluded from the analyses, to reflect more accurately test score characteristics of the student's current school. In addition, the students must have participated in at least one of the four LEP categories: (1) LY "The student was classified as limited English proficient and was enrolled in a program or receiving services that were specifically designed to meet the instructional needs of ELL students, regardless of instructional model/approach;" (2) LF "The student was being followed up for a two-year period after having exited from the ESOL program;" (3) LP "The student was in the 4th-12th grade, tested fully English proficient on an Aural/Oral test and was Limited English Proficient pending the reading and writing assessment, or the student in K-12th grade, answered 'yes' on the Home Language Survey question 'Was a language other than English spoken in the home?' and was pending aural/oral assessment;" (4) LZ "The student was one for whom a two-year follow-up period had

been completed after the student had exited the ESOL program." (Corporate Authors, 2007-2008).

The Hispanic LEP sophomore student data in the 16 traditional high schools (without names, addresses, etc. included) were exported to a computerized spreadsheet, Excel 2007. To aid in the query, Hispanic, LEP, and 9th grade filters for the 2007-2006 school year were utilized to reduce the overall population to Hispanic LEP sophomores.

In the 2007-2008 school year, there were 1,960 (6.5% of the total high school student population in the 16 traditional high schools) LEP students in grades 9-12 enrolled in the traditional high schools. Of these, 833 were Hispanic LEP students in grades 9-12. Of these, 191 were enrolled as sophomores and had been enrolled as freshman in the same school the prior year in 2006-2007. See Table 3 for Hispanic LEP sophomore distribution.

Table 3

Percent Hispanic LEP Sophomore Distribution
School

School	LF	LY	LZ	TT	Total
1	2.10	0.00	1.60	0.00	3.70
2	0.00	0.00	2.60	0.00	2.60
3	0.50	0.00	0.00	0.00	0.50
4	1.00	1.00	4.20	0.00	6.30
5	2.10	5.20	10.50	0.00	17.80
6	3.70	2.60	2.10	0.00	8.40
7	2.10	2.60	7.30	0.00	12.00
8	4.20	6.80	7.30	0.00	18.30
9	0.00	0.00	2.10	0.00	2.10
10	0.00	0.50	2.60	0.00	3.10
11	0.50	6.80	8.40	0.00	15.70
12	0.00	0.00	3.10	0.00	3.10
13	0.00	0.00	1.60	0.00	1.60
14	0.00	0.00	1.60	0.00	1.60
15	0.00	0.00	0.50	0.00	0.50
16	0.00	0.00	2.60	0.00	2.60
Total	16.20	25.70	58.10	0.00	100.00

Note. LF = language fluent, exited, will be monitored for two years, LY = ELL, eligible

for ESOL services, LZ = after two-years monitoring period, LF turns into LZ, TT = at

least one YES response on the Home Language Survey (HLS) test.

Of the Hispanic LEP sophomore population enrolled in the traditional high schools, over

half, 116 or 60.7%, were participating in the subsidized meal program. Of the 116

students, 91 or 78.4% were receiving a free meal whereas 25 or 21.6% were receiving a

reduced-cost meal. See Table 4 for Hispanic LEP sophomore participation in the

enrollment in the subsidized meal program.

Table 4

Percent Hispanic LEP Sophomore Participation in the Subsidized Meal Program

School	% Subsidized	% Unsubsidized	Total
1	3.74	0.00	7
2	2.14	0.53	5
3	0.00	0.53	1
4	3.21	3.21	12
5	12.30	5.88	34
6	4.81	3.74	16
7	8.02	3.74	22
8	12.30	5.35	33
9	1.60	0.53	4
10	1.60	1.60	6
11	8.56	6.95	29
12	0.53	2.67	6
13	1.07	0.53	3
14	0.53	1.07	3
15	0.00	0.53	1
16	0.00	2.67	5
Total			187

Note. Sub Meal Prg = Enrollment in the subsidized meal program, Free =

participant receives a free meal, Reduced = participant receives a meal at a

reduced priced.

Dependent and Independent Variables

For this study, six independent variables were selected. One independent variable,

school SES, was based on the school level. The remaining five independent variables,

(participation in the subsidized meal program, student absences, gender, GPA, NRT

reading and math) were student level indices. The selection of these variables was based

on the extensive literature review that cited these variables as strongly related to

academic achievement for minority students.

1. School SES was a composite definition that included the percentage of students participating in the subsidized meal program added to the minority representation in each school (i.g., the percentage of African American and Hispanic students).

2. Student SES was one of two levels, participating or not participating in the subsidized meal program.

3. Student absences were defined as an absence for four of more periods in a school day. Student absences were limited to excused, unexcused, and out of school suspensions.

4. Gender was included as an explanatory variable due to the growing body of knowledge that cited the increase of reading achievement among female students.

5. Grade Point Average (GPA) was included as an explanatory variable. For the purpose of this study, GPA was a cumulative variable based on a 4 point scale where A = 4, B = 3, C = 2, D = 1, and F = 0. High school students start accumulating GPA with their first high school credit.

6. FCAT Norm Referenced Test (NRT) reading and math scores were selected as independent, continuous variables. The NRT allowed for comparisons of student's score against the scores of a group of peers taking the same or equivalent test, such as the Stanford 10 Achievement Test from 2005-2008. In July 17, 2008, Florida Senate Bill 1908 removed

the requirement for school districts to administer the norm-referenced

component of the FCAT beginning in the 2008-2009 school year.

The dependent variables for this study were the FCAT reading scores and FCAT math scores employed as a measure of reading and math success, although other measures of academic success, such as grade point average (GPA), Scholastic Aptitude Test (SAT), and Academic Competency Test (ACT), could have been selected. However, GPA, SAT, and ACT have limiting characteristics that would have reduced validity. GPA would have reduced the strength to generalize across the state, school districts, schools within a district and even the same classes within a school, as individual teachers had great autonomy over the grading processes. Additionally, PCSB policy, 4.30 of the Policy Manual for the 2006 through the 2007 school year, stipulated that LEP students shall be graded on effort and application during an adjustment period of up to two years. The grading policy for LEP students further reduced the ability to generalize GPA to other LEP populations. However, the general research literature cited relationships between SES and GPA. Therefore, GPA was included as an independent variable in this study. Other standard measures such as SAT or ACT may have been considered as indicators of academic achievement, this sub-set would not have been representative of the population. The FCAT test is a standardized, criterion-referenced assessment administered to all students in Florida's public schools, providing a score that was comparable from one participant to another and from one school to another in any school in the state. FCAT reading and FCAT math scores were selected because they were valid, reliable, and standardized. FCAT reading and math scores can also be generalized across all schools in

the state of Florida for high school students within the same academic year, thereby increasing the generalizability of the research results. Florida law required all public high school students to pass the 10th grade reading and math portion of the FCAT in order for students to graduate with a standard high school diploma. Students may retake the FCAT as often as they want until they pass the test. Rather than receiving a standard diploma, students who did not pass the FCAT were issued a Certificate of Completion. The Certificate of Completion was not equivalent to a standard high school diploma. A scale score of 300 for the FCAT reading and math was considered passing. As an alternative to the FCAT, students may earn a compatible score on the SAT or ACT after retaking the FCAT a minimum of three times. See Table 5 for FCAT compatible scores. Therefore, because the FCAT test was the most widely administered test in Florida, the FCAT reading and math variables were selected as the best-standardized measure for reading and math achievement for this study.

Table 5

Compatible FCAT Passing Scores for Reading and Math

Compatible Scores			
Reading		Math	
FCAT Scale	300	FCAT Scale	370
SAT	410	SAT	370
ACT	15	ACT	15

Note. FCAT = Florida Comprehensive Test, SAT = Scholastic Aptitude Test, ACT = Academic Competency Test.

Research Questions and Hypotheses

  Research question for reading. If there was a positive relationship between school SES and FCAT reading achievement, then, at what level of school SES did Hispanic LEP sophomores start to exhibit significantly higher scores in reading achievement as defined by the FCAT after controlling for the effects of the subsidized meal program, student absences, gender GPA and NRT reading? A correlation and multiple regression analysis were employed to address this question.

  Research hypotheses for reading.

1. There will be a negative relationship between enrollment in the subsidized meal program and reading achievement scores after controlling for the effects of school SES, student absences, gender, GPA and NRT reading. A correlation and multiple regression analysis were employed to test this hypothesis.

2. There will be a relationship between gender of Hispanic LEP students and academic reading achievement scores after controlling for the effects of school SES, the subsidized meal program, student absences, GPA and NRT reading such that among Hispanic LEP students, females will have higher FCAT reading scores than males. A correlation and multiple regression analysis were employed to test this hypothesis.

3. There will be a negative relationship between student absences and reading achievement scores after controlling for the effects of school SES,

the subsidized meal program, GPA and NRT reading. A correlation and multiple regression analysis were employed to test this hypothesis.

4.   There will be a positive relationship between GPA and reading achievement scores after controlling for the effects of school SES, the subsidized meal program, gender and NRT reading. A correlation and multiple regression analysis were employed to test this hypothesis.

5.   There will be a positive relationship between NRT reading and reading achievement scores after controlling for the effects of school SES, the subsidized meal program, student absences, gender and GPA. A correlation and multiple regression analysis were employed to test this hypothesis.

Research question for math. If there was a positive relationship between school SES and FCAT math achievement, then, at what level of school SES did Hispanic LEP sophomores start to exhibit significantly higher scores in math achievement as defined by the FCAT after controlling for the effects of the subsidized meal program, student absences, gender GPA and NRT math? A correlation and multiple regression analysis were employed to address this question.

Research hypotheses for math.

1.   There will be a negative relationship between enrollment in the subsidized meal program and math achievement scores after controlling for the effects of school SES, student absences, gender, GPA and NRT math. A

correlation and multiple regression analysis were employed to test this hypothesis.

2. There will be a relationship between gender of Hispanic LEP students and academic math achievement scores after controlling for the effects of school SES, the subsidized meal program, student absences, GPA and NRT math such that among Hispanic LEP students, females will have higher FCAT math scores than males. A correlation and multiple regression analysis were employed to test this hypothesis.

3. There will be a negative relationship between student absences and math achievement scores after controlling for the effects of school SES, the subsidized meal program, GPA and NRT math. A correlation and multiple regression analysis were employed to test this hypothesis.

4. There will be a positive relationship between GPA and math achievement scores after controlling for the effects of school SES, the subsidized meal program, gender and NRT math. A correlation and multiple regression analysis tested this hypothesis. A correlation and multiple regression analysis were employed to test this hypothesis.

5. There will be a positive relationship between NRT math and math achievement scores after controlling for the effects of school SES, the subsidized meal program, student absences, gender and GPA. A correlation and multiple regression analysis were employed to test this hypothesis.

A Pearson Product Moment Correlation Coefficient referred to as *r* was used to examine the direction and strength of the relationships among the variables under investigation. *r* may have been either positive or negative, indicating the direction of the relationship. For example, if *r* were negative, as one variable increased, the other variable decreased. In a multiple regression analysis, *R* squared was useful for understanding the relationship between the FCAT reading and FCAT math scores and the independent variables; student participation in the subsidized meal program and percentage of African American and Hispanic students, participation in the subsidized meal program, student absences, gender, GPA, and FCAT NRT reading and math. Additionally, the correlation matrix in SAS also produced a *p* value associated with the correlation. The *p* value described the probability of obtaining a relationship of that strength purely by chance. This information was generated in a table form illustrating the intersections between each variable.

Multiple regression formula for FCAT reading scores. $\hat{Y}$ FCAT reading = $b1\ X1_{\text{school SES}} + b2\ X2_{\text{meal SES}} + b3\ X3_{\text{student absences}} + b4\ X4_{\text{gender}} + b5\ X5^{\text{GPA}} + b6\ X6_{\text{NRT reading}} + a$

Where:

$\hat{Y}$ =   participant's predicted score on the FCAT reading score

b_k =   nonstandardized multiple regression coefficient for the predictor variable

X_k =   predictor variable

a   =   intercept constant

Multiple regression formula for FCAT math scores. $\hat{Y}$ FCAT math $=$ b1 X1 $_{school}$

$_{SES}$ + b2 X2 $_{meal\ SES}$ + b3 X3 $_{student\ absences}$ + b4 X4 $_{gender}$ + b5 X5 $_{GPA}$ + b6 X6 NRT $_{math}$ + a

Where:

$\hat{Y}$ =   participant's predicted score on the FCAT reading score

b_k =   nonstandardized multiple regression coefficient for the predictor variable

X_k =   predictor variable

a   =   intercept constant

Correlations, Multiple Regressions, Regression Diagnostics

       The statistical software package, SAS 9.1.3, was used to analyze the data and

provide descriptive and inferential statistics. To screen the data for possible violations of

assumptions and as a diagnostic instrument for indicating possible outliers and non-

linearity, scatter plots with regression lines and 95% regression intervals were employed.

It was worthwhile to note, "not all violations of assumptions were serious" (Stevens,

2007, *p*. 57). That was to say, some assumptions (such as the assumption of normality,

that the independent variables were fixed, dependent variable errors were independent of

each other and independent of the independent variables, and observations were both

independent and representative of the population) were robust to violations, whereas

other assumptions (linearity, independence, reliability of measurement, and

homoscedasticity) were not robust to violations (Osborne & Waters, 2003). First, it was

assumed that the variables were normally distributed. This was verified by inspection of

the skewness and kurtosis of the variables. An inspection of studentized residuals (a type

of standardized residual) was employed using a stem-and-leaf plot as a means of identifying possible outliers providing they appeared to be erroneous data. Special consideration for possible deletion of data from the analyses was given to studentized residuals exceeding $\pm$ 2. This was done to reduce the probability of Type I and Type II errors and to improve estimates. Type I error referred to the probability of concluding there was a relationship between two variables when a relationship did not exist. Type II error referred to the probability of concluding there was no relationship when a relationship did exist. Secondly, because multiple regression analyses can reliably estimate the relationship between FCAT reading or FCAT math scores and the independent variables, if a linear relationship between the variables existed, the researcher created a scatter plot of the studentized residuals to analysis for nonlinearity. This scatter plot additionally indicated the extent of both curvilinear and linear relationships, if they existed. Failure to meet the linearity assumption may result in an increase in Type I and Type II errors by underestimating the true relationship between the dependent variable and independent variables.

The assumption of reliability of measurement, as implied by the name, related to the accuracy of the predictor variables. That was to say, the independent variables were presumed to be measured without error. If the predictor variables were erroneous, or lacking in reliability, then each additional predictor variable introduced reflected part of the error variance. Thus, the greater the number of predictor variables introduced into the study, the greater the likelihood that the variance was inappropriately related, causing more questionable results that lead to Type I and Type II errors.

Lastly, homoscedasticity was defined as consistent equal variance of errors across all independent variables. When the variance in errors was unequal, heteroscedasticity was said to occur. A marked increase in heteroscedasticity can lead to an increase in Type I errors by distorting the findings of the regression. This study employed the White's test to check if the variance of the residuals was homogenous in order to test for heteroscedasticity. The White's test was a test of the null hypothesis that there was no difference in the variance of the residuals. Therefore, if the p value was statistically significant, then reject the null for the alternative hypothesis that the variance was not homogenous.

Some assumptions were less critical if they were not met. The first of these were that the independent variables were fixed. The same independent variables would be used if the study were repeated. In addition, if any errors existed, they were independent of each other. However, because this study used the population of Hispanic LEP sophomores in the Pinellas County School System that were enrolled in the same school at the end of the 2006-2007 freshman year, there should have been no sampling errors.

In order to assure validity of the research, a sufficient sample size was needed. Too small of a sample (e.g., 20 or smaller) may have been problematic (Stevens, 2007). Generally, researchers recommend samples of at least 15-25 per independent variable. Because this study involved six independent variables, this placed the required sample size between 60 and 100. Power was defined as the probability of finding a statistical difference where one existed or "the probability of rejecting the null hypothesis when it was false" (Stevens, p. 3). Power was dependent on alpha (α) level, effect size, and the

size of the sample (N), the design of the research, and the statistical analysis employed in the research. In general, as N increased, so did power. Cohen (1988) described Effect Size (ES) as the ability to detect an effect of practical significance in the population. To this end, Cohen presented estimates of power for small, medium, and large effect size. Using Cohen's $f2 = R^2/(1-R^2)$ for multiple regression analyses and correlations, small ES = .02, medium ES = .15, and large ES = .35. Cohen's "Power Primer" suggested that a sample size of $N = 97$ for a medium effect size with power = .80 and alpha (α) = .05. The sample in this study was $N = 191$, thereby exceeding the minimum recommended sample size for a medium effect. However, it was important to note that a statistical significance did not mean that the difference was important, practical, or helpful in decision-making.

Of concern, were the undue influences on the coefficients by unusual and influential observations. To test for unusual and influential observations, this study tested for outliers, leverage, and influence of the observations. In linear regressions, outliers were defined as observations with large residuals, which may indicate data error or some sampling peculiarity. To test for outliers and unusual observations, in addition to the scatter plots and stem-and-leaf of the FCAT reading and math scores against each of the independent variables, the study considered studentized residuals that exceeded two to highlight potential outliers.

Leverage. The measure of the extent an independent variable deviated from the mean was referred to as leverage. These points were of concern due to the effect on the estimate regression coefficients. This study employed a test for leverage. Points that

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exceed (2k+2)/n, where k was the number of independent variables and n was the number of observations, may have been considered as having had a high leverage.

Influential data. If removing an observation substantially changed the estimate coefficient then the observation was considered influential. To test for influential observations, Cook's D was employed. As suggested by Belsley (1988) a cutoff of 4/(n-k-1), where k was the number of independent variables and n was the number of observations, was considered for further investigation.

It was worthy to note that outliers, leverage and influential observations serve to identify suspicious points. The removal of these data points may improve the fit of the regression; they may also destroy important information. Thus, regression diagnostics serve to point out possible errors in the observation or other substantive information that would warrant removal of these observations. Therefore, if this study excluded any variables, the results would have been reported both with and without outliers, leverage, and influential observations in Chapter 4.

This study started with descriptive statistics to produce a table of simple statistics, *N*, mean, standard deviation, sum, minimum and maximum, for each variable. Following the descriptive statistics, correlation analyses were employed to compute the Pearson product-moment correlation between each pair of variables. This was useful for understanding the bivariate relationships among the variables. The correlation analysis was followed by a multiple regression analysis to estimate the explanatory attributes of school SES, participation in the subsidized meal program, student absences, gender, GPA, FCAT NRT reading and math to reading and math achievement, as defined by the

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FCAT. Both FCAT reading and FCAT math scores were used independently of each other in separate multiple regression analyses.

A multiple regression analysis was employed to explain variance in an interval dependent variable that could have been attributed to a set of independent variables. A multiple regression analysis can determine if there was a significant relationship between a dependent and independent variable when analyzed as a group, or if a given independent variable was statistically significant as measured by a test of the regression coefficient for a given independent variables. In addition, a multiple regression analysis can address whether a specific independent variable explains a specific amount of the variance in a dependent variable.

A multiple regression analysis produced what was referred to as a set of multiple regression coefficients. Each coefficient represented the mean change in the predicted dependent variable given an unstandardized one-unit change in a given independent variable, while holding the other independent variables constant. The unstandardized multiple regression coefficient was symbolized by B, while the standardized multiple regression coefficient was symbolized by beta (β). Either one signified the strength of the relationship between the dependent variable and each independent variable.

Research Design

This quantitative study used a correlational analysis to examine the relationship between school SES, participation in the subsidized meal program, student absences, gender, GPA, FCAT, NRT reading and math and reading and math achievement for

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Hispanic LEP sophomores in the 16 traditional high schools in Pinellas County, Florida. The measures of achievement for the sample were both the FCAT reading and math scores.

To analyze the data, multiple strategies were employed and sequentially executed. First, descriptive analyses were employed to provide an understanding of the demographic data to include gender, GPA, FCAT NRT reading, participation in the subsidized meal program (both free or reduced meals), student absences as defined by an absence for four of more periods in a school day and limited to excused, unexcused, and out of school suspensions, and mean FCAT scores for the student population. The second phase was to reduce the student population to the study sample, Hispanic sophomore LEP students in the 16 traditional high schools in Pinellas County, Florida.

Examined in this study was the relationship between school SES, participation in the subsidized meal program, student absences, gender, GPA, and FCAT NRT reading and math to reading and math achievements for Hispanic LEP sophomores in the 16 traditional high schools in Pinellas County. The following SAS procedures were employed to address the following research hypotheses and questions.

Data Analysis

A correlational study was conducted using a regression model to analyze the data provided by the Pinellas County School District, the Pinellas County Website, and the FLDOE website. The data were transferred into a comma separated variable (.csv) format that allowed the data to be opened and saved into an Excel spreadsheet used in Microsoft

Office 2007. The data were then imported into SAS for analyses of the data. As was the

convention in social science, an alpha level of .05 was used as a level of significance for

the data in this study.

Summary

In summary, the analysis in this study investigated the relationship between

reading and math achievement and measures of SES for Hispanic LEP students in the 16

traditional high schools in the Pinellas County School District. These analyses provided a

foundation for school district personnel when deciding upon student assignment for

Hispanic LEP students. The statistical data presented in this study was a cross sectional

analysis of Hispanic LEP students in the 16 traditional high schools in Pinellas County

for the 2006-2007 and 2007-2008 school years. The results of the aforementioned

analysis were presented in Chapter 4

Chapter 4

Research Findings

The purpose of this chapter was to provide the results of this study. The first part of the chapter reiterated the purpose of the study, and stated the broad research questions and hypotheses in order to remind the reader of the important variables under consideration. The characteristics of the sample were also elucidated. The second part of the chapter examined the design of the study and criteria, discussed the descriptive statistical analyses, presented the assumptions, and established the screening and diagnostic procedures. The third part of the chapter reintroduced each research question and hypothesis, and provided the attendant results, including the descriptive statistics, the correlation matrix for FCAT reading and math, the regression analysis for FCAT reading and math, and the multiple regression equations for both FCAT reading and math scores. Lastly, a brief summary of the substantive conclusions were provided.

Purpose of the Study

The purpose of this study was to determine whether the relationship between SES and academic achievement of minority students, as indicated by the literature, held true for a sub-population of students with limited English proficiency. This study examined the relationship among measures of school and student SES, student absences, and reading and math achievement on the FCAT for Hispanic LEP high school students. This

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study added to the body of knowledge regarding the relationships between measures of school and student SES and the academic achievement of Hispanic LEP high school students.

Design of the Study and Sample Criteria

This study employed a correlational research design, utilizing a secondary data analysis. The target population for this correlational study was Hispanic sophomores in LEP programs enrolled in the 16 traditional high schools in the Pinellas County School District. The eligibility criteria to be included in the study were: (1) the Hispanic LEP students were sophomores in 2007-2008; and (2) the Hispanic LEP students had been enrolled in the same high school as freshmen ninth graders. This selection criterion was established to attribute school characteristics to student performance. Students who changed schools or were repeating 10th grade were excluded from these analyses.

Research Question

If there was a relationship between school SES and FCAT reading and math achievement, then at what level of school SES did Hispanic LEP sophomores start to exhibit significantly higher scores in reading and math achievement, as defined by the FCAT, after controlling for the effects of the subsidized meal program, student absences, gender, GPA, and NRT reading and math.

Descriptive Statistics

After examining the data for date entry errors, descriptive statistics were executed in order to examine the important characteristics of the variables under investigation. Descriptive statistical analyses were conducted for FCAT reading and FCAT math, respectively.

Table 6 provides measures of central tendency and measures of dispersion for the appropriate variables in the study. The mean, median, minimum, maximum, range, standard deviation, skewness, and kurtosis are provided for each of continuous variables under investigation.

The descriptive statistics showed that the average FCAT reading achievement was, 273.47, (SD = 56.90) from a possible FCAT reading score range from 100-500 for the whole population. The average FCAT math achievement was, 308.55, (SD = 47.57) from a possible FCAT math score range from 100-500 for the whole population. The average school SES was, 8.29, (SD = 3.55). The average GPA was estimated to be 2.50, (SD = .86). For NRT reading, the mean was estimated to be 685.90, (SD = 43.60). For NRT math the average score was 697.05, (SD = 29.55). Approximately 60% of the students in these schools were participating in the subsidized meal program. The mean of student absences was 11.62 (SD = 12.82). The sample was 56% male and 44% female.

Table 6

Descriptive Statistics for FCAT Reading and Math, N= 172

Variable	Mean	Median	Min	Max	Range	SD	Skew	Kur
FCATRead	273.47	279.50	109.00	465.00	356	56.90	-0.08	0.49
FCAT Math	308.55	317.00	100.00	398.00	298	47.57	-1.64	5.15
School SES	8.29	9.00	1.00	16.00	15	3.55	-0.14	-0.63
Meal SES	0.40	0.00	0.00	1.00	1	0.49	0.43	-1.84
Absences	11.62	8.00	0.00	97.00	97	12.82	2.74	12.13
Gender	.56	1.00	0.00	1.00	1	0.50	-0.26	-1.96
GPA	2.50	2.53	0.42	4.00	3.58	0.86	-0.21	-0.93
NRT Read	685.90	691.00	555.00	803.00	248	43.60	-0.04	0.20
NRT Math	697.05	692.00	555.00	796.00	241	29.55	-0.03	3.11

Note. N = Sample Size, Min = Minimum, Max = Maximum, SD = Standard Deviation, Skew =

skewness, Kur = kurtosis.

Statistical Assumptions

There are certain statistical assumptions underlying multiple regression analyses

that must be examined prior to the conduct of these analyses. The statistical assumptions

underlying the multiple regression procedure are illustrated below:

1. X is fixed

2. X is measured without error

3. Linearity

4. Collinearity

5. Homoscedasticity of errors (or homogeneity of variance)

6. Errors are normally distributed

7. Errors are independent of each other

8. Errors are independent of X

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Data collected for this study was from the Pinellas County School District and the Florida Department of Education and were assumed accurate.

Normality. The assumption of normality of the individual variable distributions was met using a visual inspection of the stem and leaf plot, and an inspection of skewness and kurtosis for all variables. The results of the stem and leaf plot reflected normal distributions. The values of the skewness and kurtosis fell within a near normal range of ± 2, as suggested by Chen and colleagues (n.d.). Stem and leaf plots were created using studentized residuals (a type of standardized residual created by predicting FCAT scores from school SES, student SES, student absences, gender, GPA, and NRT). Examination of these plots revealed relatively normal distributions.

Linearity. The assumption of linearity was tested by creating individual scatter plots of each outcome variable, FCAT reading and FCAT math, with each independent variable. This analysis revealed the linear nature of these bivariate relationships.

Collinearity. A term used to describe a perfect linear relationship between two explanatory variables is collinearity. An increase in collinearity may cause an inflation of the standard errors for the coefficients for the regression analysis. A scatter plot of the residuals was employed to check for collinearity among the explanatory variables yielding no indication of a linear or near-linear relationship among the explanatory variables.

Variables are measured without error. The Florida Department of Education reports reliability coefficients, Cronbach's Alpha, ranging from .88 to .92 for the subtests of the FCAT reading and math achievements tests (FLDOE, 2008). The NRT reliability

was evaluated using KR-20, a process to measure reliability for tests that contain dichotomous scored items (correct/incorrect). The KR-20 for the NRT reading and math subtests ranged from .88-.93. Because this was a secondary data analysis, it was not possible to conduct additional tests of the reliability of the score obtained for the measures of achievement. The data retrieved from the Pinellas County School District and the Florida Department of Education were assumed to be accurate and recorded without error.

Homoscedasticity of errors – Homogeneity of variance. The assumption of homogeneity of variance/homoscedasticity of the error terms was confirmed using White's Test. This test employs a test of the null hypothesis that there were no statistically significant differences in the variance of the residuals of the dependent variable when regressed against each of the independent variables. The results of the White's test for FCAT reading resulted in a Chi-Square 21.79, $p > .65$. The results for FCAT math resulted in a Chi-Square 32.52, $p > .1436$. According to Chen and colleagues (n.d.), these results were not statistically significant, resulting in a failure to reject the null and concluding that there was no violation of this statistical assumption.

Independence. The errors associated with one observation were not correlated with the errors of other observations. The data was not collected over time, but rather were cross-sectional in nature, and therefore, it was concluded that this assumption was not violated.

The independent variables are fixed. If repeated, a researcher would be expected to obtain the same values for the variable under investigation. That is, the values were not sampled or selected at random by the investigator.

Influential Observations

Several tests were conducted to examine potential outliers and influential observations to identify suspicious data points. In linear regression, outliers can be defined as observations with large residuals, which may indicate data error or some sampling peculiarity. The removal of these data points may improve the fit of the regression; they may also mask important information. Thus, regression diagnostics serve to point out possible errors in the observation or other substantive information that would warrant removal of these observations. This study examined estimates of Cook's D, Studentized Residuals, Leverage, and DFITS to test for outliers and influential observations. To test for outliers, initially Cook's D was employed. As suggested by Belsley (1988) a cutoff of $4/(n-k-1)$ was utilized, where k was the number of independent variables and *n* was the number of observations. Applying the criteria suggested by Belsley, nine observations ranging from .026 to .177 exceed the suggested value of .024. Consequently, these observations were considered for removal from the study.

To further test for outliers and unusual observations, the researcher considered studentized residuals that exceeded two. This yielded eight observations (derived from the set of individual independent variables) with studentized residuals ranging from ±2.02 to ±3.36 with higher residuals indicating more cause for consideration as potentially unusual or erroneous observations (Chen, Ender, Mitchell, Eyben, & Wells, n.d.). These

observations were considered for removal from the study as potential erroneous observations.

Leverage. Leverage is another way to think about outliers and potentially influential observations. These points were of possible concern due to large deviations from the mean and the effect on the estimated regression model. Points that exceed $(2k+2)/n$, where k was the number of independent variables and n was the number of observations, were considered to have considerable leverage (Chen et al., n.d.). For this study, six observations were observed to evidence values ranging from .09 to .31. It was important to note that the test for outliers using the studentized residuals and the test for leverage did not share common observations with each other.

The last procedure, DFITS, provided a combined estimate of the leverage and the Studentized residual, and in this study, used the conventional cutoff of $2 \times \sqrt{(k/n)}$. The DFITS analysis yielded 14 observations that met the cutoff threshold. These 14 observations had a DFITS range from .404 to 1.200

Summary of analysis of potential outliers and influence diagnostics. The observation with the largest Cook's D, .77, was also the observation with the largest leverage, .31, suggesting this observation may have been influential. Thus, an additional test for influential observations, DFITS, was conducted using the conventional cutoff of $2 \times \sqrt{(k/n)}$. The DFITS analysis yielded 14 observations that met the cutoff threshold. These 14 observations had a DFITS ranging from .404 to 1.200. Because the observation with the largest DFITS of 1.2 was also the same observation with the largest Cook's D and largest leverage, this observation was given further consideration as a potentially

unusual or erroneous observation. Upon further inspection, the observation with the largest leverage, Cook's D, and DFITS had the greatest number of school absences. This was a female student who had missed approximately half the school year with a high FCAT reading score, but low GPA, possibly due to 97 reported absences. The correlation and multiple regression analysis for FCAT reading and math were conducted both with and without this observation with no substantial change in the results. There were no indications that the observation in question was erroneous and therefore, she was not removed from the study.

As a result, there were 191 students that met the criteria for the study, not all the students participated in the FCAT reading and math, or the NRT. Four students failed to take the FCAT and 16 students failed to take the NRT. Excluding students failing to take the FCAT and NRT left a total sample of 172 eligible students.

This study met the minimum sample size required to ensure adequate statistical power, according to Stevens (2007), who suggested that a sample size less than 20 observations per independent variable was problematic. Further, Cohen's (1988) Power Primer suggested a sample size of $N = 102$ for a medium effect size with power = .80 and alpha (α) = .05 for six independent variables. Additionally, a power analysis for a multivariate regression with $\alpha = .05$, $n = 172$, and k = 7 yielded power = .90. Hence, the sample in this study exceeded the minimum sample size recommendations for a correlational study.

Correlation between FCAT Reading and the Dependent Variables

In a Pearson Product Moment Correlation Coefficient matrix, the strength and direction of the relationship between pairs of variables is represented. As evidenced in Table 7, the strongest relationship was observed between FCAT reading and NRT reading ($r =.77$, p .0001). A statistically significant relationship was observed between FCAT reading, GPA ($r =.56$, p .0001), student absences (-.26, p .001), meal SES ($r =.18$, p .02) and school SES ($r =.14$, p .06). The only relationships that were not statistically significant were the relationships between FCAT reading and school SES ($r =.14$, p .06) and gender ($r =.07$, p .33), therefore, these variables were excluded from the multiple regression analysis for FCAT reading.

Table 7

Correlations Matrix: FCAT Reading and Math and Measures of School and Student SES.

	1	2	3	4	5	6	7	8	9
Students (*n* = 172)									
1. FCATRead	-								
2. FCATMath	0.67 .0001	-							
3. SchoolSES	0.14 0.06	0.15 0.05	-						
4. MealSES	0.18 0.02	0.02 0.84	0.20 0.01	-					
5. Absences	-0.26 0.001	-0.29 .0001	-0.08 0.29	-0.04 0.64	-				
6. Gender	0.07 0.33	0.12 0.12	-0.03 0.69	-0.03 0.67	-0.10 0.20	-			
7. GPA	0.56 .0001	0.58 .0001	0.14 0.07	0.07 0.40	-0.47 .0001	-0.08 0.38	-		
8. NRTRead	0.77 .0001	0.64 .0001	0.06 0.47	0.10 0.21	-0.23 0.00	-0.02 0.81	0.51 .0001	-	
9. NRTMath	0.60 .0001	0.68 .0001	0.09 0.23	-0.01 0.87	-0.15 0.05	0.16 0.04	0.42 .0001	0.67 .0001	-

Note. FCATRead = FCAT reading score, FCATMath = FCAT math score, SchoolSES = a composite definition that included student percentage of participation in the subsidized meal program and the percentage of African American and Hispanic students per school, MealSES = student participation in the subsidized meal program. Absences = student absences, GPA = Grade Point Average, NRTRead = FCAT NRT reading, NRTMath = FCAT NRT math.

Correlation between FCAT Math, the Dependent and Independent Variables

In a Pearson Product Moment Correlation Coefficient matrix, the strength and direction of the relationship between pairs of variables is represented. As evidenced in Table 7, the strongest relationship was observed between FCAT math and NRT math (*r* =.68, *p* .0001). A statistically significant relationship was observed between GPA (*r* =

.58, *p* .0001), Absences (-.29, *p* .0001) and school SES (*r* =.15, *p* .05) and FCAT math. The only independent variables that were non-significant were meal SES (*r* =.02, *p* .84 and gender (*r* =.12, *p* .12). These two were eliminated from the Multiple Regression analysis for FCAT math.

Summary: The correlation coefficients indicated a statistically significant relationship between the FCAT reading and four of the independent variables, NRT reading, GPA, student absences, and meal SES. There was no statistically significant relationship between FCAT reading and school SES or gender; therefore, these two variables were excluded from the multiple regression analyses for FCAT reading.

The correlation coefficients indicated a statistically significant relationship between the FCAT math and four of the independent variables, NRT reading, GPA, student absences, and school SES. There was no statistically significant relationship between FCAT math and meal SES or gender; therefore, these two variables were excluded from the multiple regression analyses for FCAT math.

FCAT Reading Regression Analysis

Regressing the FCAT reading scores on the linear combination of meal SES, absences, GPA, and NRT reading accounted for approximately 64% of the variance (R^2=.64) in FCAT reading *F* (167) 73.34, (*p* < .0001). Not surprisingly, the standardized regression coefficient, symbolized by beta (β), was the largest in magnitude for NRT reading (.64), followed by GPA (.22), and meal SES (.12). This regression weight (β) described the relative importance of the independent variable. For example, we would

expect to see more than half a standard deviation increase in FCAT reading for every one standard deviation increase in NRT reading. Hence, a one standard deviation increase in NRT reading led to a .64 standard deviation increase in FCAT reading scores holding the other independent variables constant. A one standard deviation increase in GPA led to a .22 standard deviation increase in FCAT reading scores holding the other independent variables constant. A one standard deviation increase in meal SES led to a .11 standard deviation increase in FCAT reading scores holding the other independent variables constant. Student absences was not a statistically significant predictor of the achievement for FCAT reading. A summary of the regression analysis for FCAT reading scores is presented in Table 8.

Multiple Regression Formula for FCAT Reading Scores

$\hat{Y}$ *FCAT reading* = -358 + .64(NRT reading) + .22(GPA) + .11(meal SES)

Table 8

Summary Regression Analysis for Variables Explaining FCAT Reading Scores (N = 172)

Variable	*B*	*SE B*	*t* Value	Pr>/*t*/	*β*
Intercept	-358				
NRT Reading	.84	.07	11.82	<.0001	.64
GPA	14.57	3.94	3.70	.0003	.22
Meal SES	12.56	5.43	2.31	.0220	.11
Absences	-.02	.24	-.09	.9288	-.01

Note. R^2 = .64, *F* Value = 73.34 (*p* <.0001).

FCAT Math Regression Analysis

Regressing the FCAT math scores on the linear combination of school SES, absences, GPA, and NRT math accounted for over 57% of the variance (R^2=.57) in FCAT math *F* (167) 54.84, (*p* < .0001). Not surprisingly, the standardized regression coefficient,

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symbolized by beta (β), was the largest in magnitude for NRT math (.53), followed by

GPA (.32). This regression weight, β, described the relative importance of each of the

independent variables. For examples, we would expect to see more than half a standard

deviation increase in FCAT math for every one standard deviation increase in NRT math.

Hence, a one standard deviation increase in NRT math led to a .53 standard deviation

increase in FCAT math scores holding the other independent variables constant. A one

standard deviation increase in GPA led to a .32 standard deviation increase in FCAT

math scores holding the other independent variables constant.

Student absences and school SES were not statistically significant predictors of

the achievement for FCAT math. A summary of the multiple regression analysis for

FCAT reading scores is presented in Table 9.

Multiple Regression Formula for FCAT Math Scores

$\hat{Y}$ *FCAT math* = -330 + .53(NRT math) + .32(GPA)

Table 9

Summary Regression Analysis for Variables Explaining FCAT Math Scores ($N = 172$)

Variable	*B*	*SE B*	*t* Value	Pr>/*t*/	β
Intercept	-330				
NRT Math	.86	.09	9.50	<.0001	.53
GPA	17.88	3.48	5.13	<.0001	.32
School SES	.73	.69	1.05	.2945	.06
Absences	-.20	.21	-.96	.3388	-.06

Note. $R^2 = .57$, *F* Value = 55.65 ($p < .00001$).

Analysis of Research Question and Hypotheses for FCAT Reading and Math

FCAT Reading and Math Question

If there was a positive relationship between school SES and FCAT reading and math achievement, then, at what level of school SES did Hispanic LEP sophomores start to exhibit significantly higher scores in reading and math achievement as defined by the FCAT reading and math achievement, after controlling for the effects of the meal SES, school SES, student absences, GPA, and NRT reading and math?

Reading results. The relationship between school SES and FCAT reading achievement was not statistically significant ($r =.14$, $p = .06$). Consequently, school SES was excluded from the multiple regression analysis.

Math results. The multiple regression analysis indicated that at $\alpha = .05$, school SES was not statistically significant in explaining FCAT math achievement t (1) 1.05, $p >$ .2945 after controlling for student absences, GPA and NRT math.

Hypothesis 1 Reading and Math

There will be a negative relationship between enrollment in the subsidized meal program and reading and math achievement scores after controlling for the effects of school SES, student absences, GPA, and NRT reading and math.

Reading results. The multiple regression analysis indicated that at $\alpha=.05$, and controlling for student absences, GPA, and NRT reading and math, the subsidized meal program was statistically significant t (1) 2.31 $p >.0220$.

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Math results. The relationship between the subsidized meal program and FCAT math was not statistically significant ($r = .02$, $p = .84$). Consequently, the subsidized meal program variable was excluded from the multiple regression analysis.

Hypothesis 2 Reading and Math

There will be a relationship between gender of Hispanic LEP students and academic reading and math achievement scores after controlling for the effects of school SES, the subsidized meal program, student absences, GPA, and NRT reading and math such that among Hispanic LEP students, females will have higher FCAT reading and math scores than males.

Reading results. The relationship between gender and FCAT reading was not statistically significant ($r = .07$, $p = .33$). Consequently, gender was excluded from the multiple regression analysis.

Math results. The relationship between gender and FCAT math achievement was not statistically significant ($r = .12$, $p = .12$). Consequently, gender was excluded from the multiple regression analysis as statistically insignificant at explaining FCAT math achievement.

Hypothesis 3 Reading and Math

There will be a negative relationship between student absences and reading and math achievement scores after controlling for the effects of school SES, the subsidized meal program, GPA, and NRT reading and math.

Reading results. The multiple regression analysis indicated that at α=.05, and controlling for the subsidized meal program, GPA, and NRT reading, student absences was not statistically significant t (1) -.09, p >.93.

Math results. The multiple regression analysis indicated that at α =.05, and controlling for school SES, GPA, and NRT math, student absences was not statistically significant t (3) -0.96, p >.34.

Hypothesis 4 Reading and Math

There will be a positive relationship between GPA and reading and math achievement scores after controlling for the effects of school SES, the subsidized meal program, student absences, and NRT reading and math.

Reading results. The multiple regression analysis indicated that at α=.05 and controlling for the effects of the subsidized meal program, NRT reading, GPA was statistically significant at explaining FCAT reading achievement t (1) 1.05, p >.0003.

Math results. The multiple regression analysis indicated that at α=.05 and controlling for the effects of school SES, student absences, and NRT math, GPA was statistically significant at explaining FCAT math achievement t (1) 5.13, p >.0001.

Hypothesis 5 Reading and Math

There will be a positive relationship between NRT reading and math scores after controlling for the effects of school SES, the subsidized meal program, student absences and GPA.

Reading results. The multiple regression analysis indicated that at α=.05 and controlling for the effects of the subsidized meal program, student absences, and GPA,

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NRT reading was statistically significant at explaining FCAT reading achievement *t* (1)

11.82, *p* >.0001).

Math results. The multiple regression analysis indicated that at α=.05 and

controlling for the effects of school SES, student absences and GPA, NRT math was

statistically significant at explaining FCAT reading achievement *t*(1) 9.5, *p* >.0001.

Summary

Chapter 4 examined the relationship between measures of school and student

socioeconomic status and FCAT reading and math scores for Hispanic LEP high school

sophomores in Pinellas County, Florida for the 2007-2008 school year. School SES, meal

SES, student absences, gender, GPA, and NRT reading were analyzed to determine their

relationship to FCAT reading using a correlational study employing the correlational and

multiple regression analyses. A Pearson Product Moment Correlation Coefficient was

used to examine the strength and direction among the measures of achievement and

indicators of school and student socioeconomic status. To examine these relationships,

one research question and five research hypotheses were analyzed for each achievement

variable.

 The results indicated that there were statistically significant relationships between

FCAT reading, NRT reading, GPA and meal SES after controlling for student absences.

This means that most of the variance in FCAT reading scores (64%) is accounted for by

the students' NRT scores, GPA and meal SES in that order. For FCAT math, the multiple

regression results indicated the variance (57%) was accounted for by NRT math and GPA

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after controlling for the effects of school SES, and student absences. Collectively, the analyses indicated that there was no meaningful or statistically significant relationship between student absences for either reading or math. Chapter 5 of this study addressed the findings and explored related issues. It also addressed the limitations associated with this study and made recommendation for future studies.

Chapter 5

Summary and Discussion

Overview

The final chapter in this quantitative research study provided a summary of the study and the findings. The introduction discussed the problem and purpose of this study to include the variables and sample, and research design employed in this study. This is followed by a summary of the research questions, hypotheses, and their respective analysis. Finally, implications and explanations of the findings are discussed including the limitations associated with this study and recommendations for future researchers interested in this research topic.

Introduction

The purpose of this study was to examine the relationships between measures of student academic achievement and school SES as defined by the variables of school SES, meal SES, student absences, gender, GPA, and NRT reading and math to FCAT reading and math scores for Hispanic limited English proficient (LEP) high school students. These variables were selected from the extensive literature regarding the academic achievement of minority students and indices of SES. The population in this study was Hispanic LEP sophomores in the 16 traditional high schools in Pinellas County, Florida.

Hispanic LEP students are unique from other Hispanic students as LEP students speak a

language other than English at home. In order to be eligible for LEP services, students

must score at a designated level on the Language Assessment Battery-Revised (LAB-R)

and New York State English as a Second Language Achievement Test (NYSESLAT) test

measuring language fluency. Sophomore students were selected because of Florida's

requirement that all sophomores take the FCAT. To assess the influence of school SES

factors on Hispanic LEP students, students included in the study must have been

registered as freshman in the previous year, 2006-2007, at the same school.

Due to the emphasis placed on the FCAT and the No Child Left Behind Act of

2001 by school districts, many schools have focused their efforts on the reading and math

achievement of small groups of students such as minority, economically disadvantaged,

and LEP students. However, there remains an academic achievement gap between

advantaged and disadvantaged students. An explanatory examination of the relationship

between measures of SES and reading and math achievement of the FCAT may be

beneficial for school districts to address policies such as student assignments and

allocation of resources to the largest LEP population, Hispanics. Additionally, this study

addressed the characteristics associated with SES and minority populations and their fit to

the Hispanic LEP population. Lastly, this study addressed the lack of substantive research

literature regarding the relationship between SES and academic achievement of Hispanic

LEP students.

Discussion

This study employed a correlational-design multiple regression analysis to explore the relationship between school SES, meal SES, gender, student absences, NRT reading and math, and GPA to FCAT reading and math scores. Researchers in the field, such as Baer and Schmitz (2007), Carpenter, Ramires, and Severn (2006), Naglieri, Winsler, and Booth (2004), specializing in quantitative studies of minority issues in education have utilized correlational-design multiple regression analyses to explore the relationships between academic achievement and measures of SES. In this study, the Pearson Product Moment Correlation showed a statistically significant bivariate relationships between FCAT reading scores and NRT reading, GPA, meal SES, and student absences only. Hence, these variables were included in the FCAT reading regression analysis. The Pearson Product Moment Correlation also showed a statistically significant bivariate relationships between FCAT math scores and NRT math, GPA, school SES, and student absences only. Consequently, these variables were included in the FCAT math regression analysis.

The linear combination of NRT reading scores, GPA, and meal SES were statistically significant in the FCAT reading regression model, $\hat{Y} \text{ FCAT }_{reading} = b_1 X_{1 \text{ NRT reading}} + b_2 X_{2 \text{ GPA}} + b_3 X_{3 \text{ meal SES}} + b_4 X_{4 \text{ student absences}} + a$. Whereas, student absences were not statistically significant.

The linear combination of NRT math scores and GPA were statistically significant in the FCAT reading regression model, $\hat{Y} \text{ FCAT }_{math} = b_1 X_{1 \text{ NRTmath}} + b_2 X_2$

$_{GPA} + b_3 X_{3 \text{ school SES}} + b_4 X_{4 \text{ student absences}} + a$. Whereas, school SES and student absences were not statistically significant.

Discussion and Findings

This study supported the hypotheses that meal SES, GPA, and NRT reading significantly explained the variance for FCAT reading. This study also supported the hypotheses that GPA and NRT math significantly explained the variance for FCAT math. However, this study did not support the hypotheses that student absences, gender, and school SES displayed a statistically significant relationship for both FCAT reading and math scores. Further, this study did not support the hypothesis that meal SES displayed a statistically significant relationship with FCAT math. The role of the individual predictor variables, school SES, meal SES, student absences, and gender was unexpected based on the general literature on the relationship between SES and academic achievement of minority students.

A possible explanation for the unexpected relationships among student absences, gender, and school SES, and FCAT reading and math scores could be attributed to the familial culture of the Hispanic LEP student. Hoxby (2002), Ingersoll (2004), and Kahlenberg (2004) acknowledged that European American, middleclass culture moves education forward; further, minority students show higher academic performance and attainment when attending middleclass schools. The literature describing the middleclass education concept suggests that middleclass White students have access to a higher quality education, more highly educated teachers, and more advanced curriculum than their counterparts and therefore perform higher on standardized measures (Hoxby, 2002;

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Ingersoll, 2004; Kahlenberg, 2000; Kahlenberg, 2002; Kahlenberg, 2004). However, there is little indication that these same qualities, such as work ethics and value of education, found in the culture of middleclass education are not also found in the native culture of the Hispanic LEP student.

SES and student absences. According to the literature reviewed for this study, impoverished students attended disproportionately high minority, highly impoverished schools (Meier, et al., 2004; Reyes & Capper, 1991; Tillman, 2005; Viadero, 2000). Generally, underprivileged students exhibited lower GPA, scored lower on standardized tests, and experienced higher incidents of school related absences. Participation in the subsidized meal program is a common index for SES used by numerous educational researchers such as Burris, Heubert, and Levin, 2006, Lewis and Cheng, 2006, and Martin, Karabel, and Jaquez, 2005. The No Child Left Behind Act of 2001 uses the criteria of the subsidized meal program as the indices for economically disadvantaged. Thus, it was surprising that the findings in this study show that school SES and student absences were not statistically significant in explaining FCAT reading and math scores. Also unusual was the relationship between meal SES and the academic performance of Hispanic LEP students. Although meal SES showed a statistical difference for explaining FCAT reading, the same was not true for FCAT math. For FCAT reading, the β coefficients for meal SES were lower than suggested in the research literature (Burris, Heurbert, & Levin, 2006; Lewis & Cheng, 2006; Martin, Karabel, & Jaquez, 2005).

The literature placed great emphasis on the relationship between SES and academic achievement. Researchers such as Burris et al., (2006), Lewis and Cheng

(2006), and Martin and colleagues (2005), used student participation in the subsidized meal program as an index for poverty. The findings in this study regarding SES and the academic achievement of Hispanic LEP students could be attributed to the operational definition of school SES (the percentage of African American + Hispanic + students on the subsidized meal program) used in this study. There are reports that students eligible for the subsidized meal program do not apply for this benefit, whereas, ineligible students apply for the subsidized meal program and receive these benefits (McLaughlin, 2009). Further, with the inability to function fully in the English language, it is possible that Hispanic LEP students, and their families, are not aware of the application processes to obtain a free or reduced price meal at their school. Hence, it stands to reason that the subsidized meal program may not be the most accurate measure for SES for the Hispanic LEP population. Other levels of SES, such as parental educational level or parental profession, may prove better indices of SES than the subsidized meal program. Additionally, if the school had a substantial percentage of situational impoverished Hispanic LEP students participating in the subsidized meal program, then participation in the subsidized meal program may not be the appropriate indicator of generational poverty (Payne, 1999). Thus, doubt was cast on the explanatory value of the subsidized meal program as an indicator of SES for Hispanic LEP students.

   GPA and NRT. For both FCAT reading and math, GPA and NRT were the strongest variables in explaining FCAT scores. Both GPA and NRT indices were statistically significant at $\alpha = .05$. The β coefficient showed that both variables were the most influential variable for explaining FCAT reading and math score of all the variables

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used in this study. The findings that GPA and standardized tests, such as the NRT, were strong predictors were supported by the numerous references in the research literature such as Reyes and Capper (1991), and Sus, Houston, and Suh (2007), that confirmed statistically significant relationships among GPA, standardized tests, such as the NRT, and minority students.

Gender. According to the literature, there should have been a difference in the FCAT scores between males and females (Andres, Adamuti-Trache, Yoon, Pidgeon, & Thomsen, 2007; Sadker, 1999). Traditionally, female students have scored higher than have their male counterparts on standardized reading tests, and males have scored higher on standardized math tests, such as the ACT. In 2008, female students scored an average of 21.5 on ACT reading, whereas males scored an average of 21.2 on ACT reading. In math, males have a slight increase over females with an average score of 21.6 for males and 20.4 for females (Digest of Educational Statistics, 2008). The ACT is a standard test with scores ranging from 1 to 36. Likewise, according to the National Center for Educational Statistics (2009), female high school students outperformed male high school students on reading scale scores with females scoring an average of 292 and males scoring an average of 279 on a scale ranging from 0 to 500; in math, males scored 308, and females scored an average of 305. However, contrary to the literature, this study found that gender was not statistically significant at predicting FCAT reading and math. Perhaps this is explained by the efforts of test writers to reduce gender and cultural bias in standardized tests such as the FCAT, NRT, and ACT. Other factors, such as teacher training in second language acquisition or culturally bias-free classrooms, may have

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reduced gender bias in the FCAT test results. Finally, the results of this study establish a strong relationship between the indices used for measures of school and student SES and FCAT reading and math scores.

Relevance of the Findings

The findings of this study were not as expected taking into consideration the research literature on the relationship between SES and academic achievement of minority students. These findings suggest that SES indices such as the subsidized meal program and school SES were not as strong explanatory indices for Hispanic LEP high school students as they might have been for minority students such as African Americans and non LEP Hispanics. Variables such as student absences failed to explain FCAT scores indicating that the relationship between measures of school and student SES and Hispanic LEP high school students appeared to be different from that of other minority students. A possible explanation for these findings is that Hispanic LEP students may come from middleclass backgrounds in their country of origin. The inference that Hispanic LEP students living in poverty have lower academic performance does not appear to hold true for the Hispanic LEP students in this study. First impressions are not necessarily reality (Shaw, 2007). Middleclass culture and work ethics are found in countries and cultures beyond the U.S. The fact that a student is in an impoverished school, or is a Hispanic LEP student, does not necessarily predict that the student will have poor academic performance.

Implications of the Findings

Since the time of this study, the Pinellas County School district has eliminated NRT testing. With the strong explanatory power of the NRT, it would benefit the school district to reemploy the NRT to help identify students who may require additional educational services to demonstrate FCAT competency in reading and math. This, in combination with GPA, could provide a strong predictor of FCAT success in reading and math. Therefore, school districts may want to give serious consideration of reinstating the NRT.

It was expected that GPA and standardized tests, such as the NRT, helped explain FCAT reading and math scores. This study confirmed that GPA and standard tests such as the NRT are strong indicators of academic success and help to identify students in need of remediation. Elimination of the NRT may cause school districts to look to other indicators such as GPA, which is only calculated at the end of the semester, or twice a year.

Other alternatives such as math attainment as indicated by math rigor may be a better predictor for performance on high stakes tests. Future researchers should consider including math attainment as a possible variable for academic achievement for minority populations, such as Hispanic LEP students. School personnel should be cognizant of all explanatory indices for high stakes tests to indentify struggling students to provide appropriate instructions.

If districts have made the decision to drop NRT due to financial reasons as they work to balance budgets in a struggling economy, any savings should be wisely

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appropriated for assisting Hispanic LEP students. Zuniga, Olson and Wilson suggested :
(1) recruiting and retaining of qualified ESOL teachers; (2) procuring of translators and
other support personnel; (3) integrating Hispanic LEP students into regular classrooms;
and (4) tutoring for after-school academic assistance would benefit struggling students
(2003).

Educational leaders should be cautious when using SES labels such as poor
students, low SES students, or minority students, to describe the Hispanic LEP student,
and indeed, all students. Rather, all educators should work to help Hispanic LEP students,
and all students in need, to become productive and contributing members of the society.

Outside of the educational community, agricultural industries dependent upon
Hispanic migrant workers would also be interested in the reading and math skills of their
employees. An educated workforce can increase the productivity, decision-making skills
and knowledge of workers in general. This benefits both the employer and the employee.
An increase in reading and math skills could potentially increase the productivity of
Hispanic workers making them a more valued employee and a more productive citizen.

Limitations of the Study

Several limitations to this study existed. Information such as race/ethnicity,
gender, enrollment in the subsidized meal program, GPA, FCAT scores, NRT scores, and
student absences were accepted without verification for accuracy from the school
system's database. Therefore, generalization of this study was limited to the accuracy of
the data entered into the Pinellas County Schools' database. The population and sample

was limited by the term used to describe their ethnicity, Hispanic, as there is great diversity in the Hispanic population. This study was unable to distinguish between nationalities among the Hispanic population. Hispanics such as Argentineans, Cubans, and Mexicans were categorized as one ethic population. Further, the indicator of the subsidized meal program limited the ability to generalize the results regarding SES. The report by McLaughlin (2009) suggested that ineligible students participated in the subsidized meal program and eligible students, especially in high schools, were underreported. McLaughlin revealed that over half of the families participating in the subsidized meal program were ineligible to receive the benefits of the subsidized meal program. Therefore, the ability to generalize SES was limited to students participating in the subsidized meal program.

Lastly, a multiple regression analysis examines relationships between an independent variable and multiple independent variables. The results of a multiple regression cannot be interpreted as causation. Multiple regression analysis are corelational in nature and should not be interpreted to represent casual associations among the variables.

Recommendations for Further Research

As expected, research yields more questions than answers. A similar study with similar populations in different school districts may help confirm the findings that measures of SES, student absences, and gender may not be valid predictors of academic success for Hispanic LEP high school students as they are for other minority populations.

Thereby, strengthening the conclusions derived from this study that measures of school and student SES need to be more closely scrutinized as predictors of academic success on standardized tests, such as the FCAT, for Hispanic LEP high school students.

Educators, counselors, and administrators in school districts with LEP populations, other than Hispanics, may be interested in replicating this study on other sub LEP populations, such as Asians. Often, Asians are excluded from research populations due to too small a sample size (Attewell & Domina, 2008). Additionally, Asians are also included in the European population as noted by Schiller and Muller (2003). The study of other LEP populations may provide school districts with possible explanatory variables and proactive indices for high stakes testing.

A qualitative study may prove fruitful in unveiling the cultural context that differentiates the Hispanic LEP students from other minority groups. Each ethnic population brings forward its own unique cultural context and richness to the school and community, thereby establishing its own unique consideration of academic instruction and other educational services. Additionally, similar studies on different Hispanic nationalities may also prove enlightening in helping the educational community find strategies and set policies to help foreign-born and LEP students succeed academically.

The literature suggested that impoverished and minority students disproportionately were taught by less qualified teachers (Alexander & Salmon, 2007; Brennan & Bliss, 1998; Ingersoll, 2004; Jacob, 2007; Meier et al., 2004). The No Child Left Behind Act, 2001, addressed the need to have highly qualified teachers. The literature indicated that middleclass schools had a higher percentage of teachers with

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advanced degrees than did less affluent schools. Teachers with advanced degrees was one of the key indicators alluded to in the literature as one of the possible factors for the increased academic gains of students in middleclass schools (Ingersoll, 2004; Jacob, 2007; McElroy, 2007). The literature was clear that impoverished, high minority schools had less qualified and fewer teachers with advanced degrees (Brennan & Bliss, 1998; Ingersoll, 2004; Jacob, 2007; Johnson, 2007). This study was not able to assess the percentage of Hispanic LEP students that had teachers with advanced degrees. Further studies should investigate the relationship between teacher-level characteristics such as training and certification, and Hispanic LEP reading and math achievement at the student level.

The role of teacher training and certification has been addressed by NCLB in the call for highly qualified teachers. Future studies could look at a comparison of teachers with and without advanced degrees teaching LEP students. Similar studies might include teacher experience, teachers teaching out-of-field, ethnicity, and minority status of educators teaching LEP students to see if these variables contribute to the academic performance of Hispanic LEP students, as suggested by Ingersoll (2004) and Kahlenberg (2000). Such future studies could help explain the role between teaching credentials and reading and math achievement for Hispanic LEP high school students. Lastly, future studies should include an expanded definition of SES that increases the ability to generalize the results of future studies to other populations. Future studies should consider other indices for SES such as housing value, family income, parental educational attainment, parental occupation, and parental employment status. Expanding

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the definition of SES to include other indices will increase the ability to generalize the results of future studies to other populations.

Conclusion

It can be argued that the subject of education has long been in the forefront of the American consciousness. Education has also been the talk on the political landscape as cited in and directed by the No Child Left Behind Act of 2001 to improve the education for all students. This study is but one of a relatively small groups of studies that attempted to address the relationship between measures of SES and academic achievement for a specific subgroup of minority students, the Hispanic LEP student. The results from this study suggest that when viewed through the middleclass education concept, Hispanic LEP students could be considered a unique population from other minority students.

If past performance is an indicator of future performance, then school districts must find appropriate variables to help predict academic success to assist all struggling students. The middleclass concept that poor school + poor student = poor academic performance may not necessarily hold true for Hispanic LEP students. The message is not to judge a book, or in the case of this study a student, by its cover. The broad brush of poverty does not necessarily accurately paint the current portrait of the Hispanic LEP student.

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