

## ABSTRACT

Title of Document: A STUDY DETERMINING SIGNIFICANT DIFFERENCES IN TERRANOVA READING AND MATH SCORES BETWEEN EIGHTH GRADE AFRICAN AND EUROPEAN AMERICAN STUDENTS

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The participating school system's minority population, notably African Americans, ranked in the top five school systems in academic performance in reading and math when compared to other states and other African American populations across the United States. These measurements were taken from the National Assessment of Educational Progress (NAEP). The purpose of this investigation was to examine whether there was a significant achievement gap between races across system-wide assessments on a yearly basis. Results of the multivariate analyses of reading and mathematics scores indicated there were significant differences in both areas at the  $p < .05$  level on the TerraNova, Third Edition. These significant differences lend support to the results of the NAEP testing in 2007 and again in 2009 that demonstrated the gap. Discussion of the implications of this gap for the school system was presented.

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READING AND MATH SCORES BETWEEN EIGHTH GRADE AFRICAN  
AND EUROPEAN AMERICAN STUDENTS

By

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## **Dedication**

I dedicate this dissertation to my daughter Mandra and my son Braden who first gave me the question, “How well are our children performing in this school system?” Both my children have been fortunate to attend such a wonderful school system and have had great teachers in the process. Both have been successful because of this system. I thank this system every day for what it does for children and I appreciate having the opportunity to work with these students and their families.

I thank my wife, Laura, for being patient, understanding and supportive through our first year of marriage while I finish this journey. I know it has not been easy, there is light at the end of this tunnel. I thank my new family of Flavia, Genorace, Brice and Samara. Flavia I thank you for being there when we needed the time to work; and of course the children for not giving me too hard of a time when they wanted to play, but I had other things that needed to be done.

Finally, I have to thank my parents, Jesse and Melissa Smith for giving me the opportunity to work on a doctorate. My parents did what they were supposed to do, raise their children right, give them a sense of who they are and instilled in them a sense of stick-to-itiveness. They told us that education was important and I gave that value to my children who will pass it on to their children. This is something to be treasured, an opportunity that many do not have. Thank you for making sure that I had that opportunity.

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## **Chapter 1: Introduction**

This study was conducted in a large school system that serves children of military and defense personnel, which is referred to throughout as the “participating system”. Students in the participating system have ranked academically in the top ten within the United States (U.S.) and scores of minority students in the participating system schools have consistently ranked within the top five in academic achievement based on federal and state mandated test scores (Smrekar & Owens, 2001). The participating system uses National Assessment of Educational Progress (NAEP) scores to compare progress with state school systems across the U.S. While the participating system has accurately touted minority scores as being superior to state school system minority scores on standardized testing, within its own system, minorities trail European-American peers.

African-American and Hispanic students in the participating system continually score below those of European-Americans peers. The purpose of this study was twofold. First, the study was designed to determine if African American students’ reading and math scores were significantly lower than European American students at middle schools within the participating system. Second, the purpose was to determine whether eighth grade African and European American students’ reading and math subtests scores could be predicted through the use of race (African American and European American), gender, or special education status.

## **The Participating System**

The participating system that housed the district in which the study was conducted operates schools throughout the U.S. and the world. It services 83,813 students, operates 191 schools in 14 districts in 12 foreign countries, 7 U.S. states, Guam, and Puerto Rico. The system has two major divisions: Division I which is the overseas school system (schools in the Pacific, Europe and Cuba) and Division II which is the domestic school system. Division I has 58,402 students and 135 schools, and Division II has 25,411 students and 64 schools. Minority students account for 44.9% of the total enrollment in the system. Enrollment breaks down as follows: 55.1% White, 16.7% African American, 11.6% Multi-Racial, 7.2% Declined to State, 6.5% Asian, 1.6% Pacific Islanders, and 1.3% American Indian or Alaskan Native. Student Ethnicity is represented by 78.3% Non-Hispanic, 16.8% Hispanic or Latino and 4.9% declined to State. The typical students live in a community where 90% of the parents have a high school diploma. About 80% of the students' parents are enlisted personnel and 32% of military personnel qualify for free or reduced lunches. Children in the participating system face frequent moves as the mobility rate is 35%.

Teacher salaries in the participating system are based on the top paying 20 school districts in the U.S. The teachers are well educated; about 65% have a graduate degree. Eighty-six percent are white and 73% are female. Seventy-three percent of the teachers have more than 10 years of teaching experience; less than 10% of teachers have fewer than 2 years' experience. The participating system has many other resources. For instance, \$356 is spent on technology per student, while the average in U.S. public

schools is \$113 per student. Class sizes for grades 1 to 3 have a ratio of 1:18. Overall, the system spends approximately \$1,500 more per student than the national average. It receives no Title I or II funding or other federal or private funding (<http://system.edu/pubs/docs/systemAnnualReport-09.pdf> ).

## Student Achievement in the System

Achievement on the National Assessment of Educational Progress (NAEP) for minority students within the participating system is ranked within the top 10 states in the nation (Smrekar & Owens, 2003). Tables 1 through 4 show the achievement of the participating African American students in fourth and eighth grades on the NAEP compared to others in U.S. public school systems.

Table 1

*Participating System NAEP Reading National Rank Scores for 2003, 2005, 2007 and 2009*

	Grade 8				Grade 4			
Participating System	2003	2005	2007	2009	2003	2005	2007	2009
Rank	2nd	2 <sup>nd</sup>	1st	3rd	4th	3 <sup>rd</sup>	3rd	3rd

Table 2

*NAEP 2003, 2005, 2007 and 2009 Average Reading Scale Scores for African American Students Grades 8 and 4*

	2003		2005		2007		2009	
Grade 8 Students	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Participating System African American	258	1st	258	1st	259	1 <sup>st</sup>	262	1st

Nation African American	244		242		244		245		
Nation All Students	261		260		261		262		
		2003		2005		2007		2009	
Grade 4 Students		Score	Rank	Score	Rank	Score	Rank	Score	Rank
Participating System		214	1st	218	1st	218	1st	218	1st
African American									
Nation African American	197		199		203		204		
Nation All Students	216		217		220		220		

Table 3

*NAEP Mathematics National Ranks Scores for 2003, 2005, 2007 and 2009*

All Students	Grade 8				Grade 4			
Participating System	2003	2005	2007	2009	2003	2005	2007	2009
Rank	4th	6th	9 <sup>th</sup>	8th	6th	8th	11 <sup>th</sup>	11th

Table 4

*NAEP 2003, 2005, 2007 and 2009 Average Mathematics Scale Scores African American Students Grades 8 and 4*

	2003		2005		2007		2009	
Grade 8 Students	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Participating System	270	1st	267	1st	272	1st	269	3 <sup>rd</sup>
African American								
Nation African American	252		254		259		260	
Nation All Students	276		278		280		282	
	2003		2005		2007		2009	
Grade 4 Students	Score	Rank	Score	Rank	Score	Rank	Score	Rank
Participating System	227	1st	227	3rd	227	4th	227	4th
African American								
Nation African American	216		220		222		222	
Nation All Students	234		237		239		239	

The participating system appears to be doing well in achieving the goal of its mission statement, “Success for All Students.” When the data are disaggregated (Tables 5-12) they show that although African Americans continue to surpass their counterparts in the U.S., these students have not caught up with their European American peers within the participating system. In every year since 2003, European American fourth and eighth grade students have consistently exceeded their African American counterparts. There

has not been one area in which African American students, at either grade level, have equaled or surpassed their European American peers.

Table 5

*2009 8<sup>th</sup> Grade NAEP Reading and Math Scores*

Subject	Nation	System	Diff	Nation		Diff	System		Diff
				Black	White		Black	White	
Reading	262	272	-10	245	271	-26	262	278	-16
Math	282	287	-5	260	292	-32	269	294	-25

Table 6

*2007 8<sup>th</sup> Grade NAEP Reading and Math Scores*

Subject	Nation	System	Diff	Nation		Diff	System		Diff
				Black	White		Black	White	
Reading	261	273	-12	244	270	-26	259	278	-19
Math	280	285	-5	259	290	-31	272	291	-19

Table 7

*2005 8<sup>th</sup> Grade NAEP Reading and Math Scores*

Subject	Nation	System	Diff	Nation		Diff	System		Diff
				Black	White		Black	White	
Reading	260	271	-11	242	269	-27	258	276	-18
Math	278	284	-6	254	288	-34	267	292	-25

Table 8

*2003 8<sup>th</sup> Grade NAEP Reading and Math Scores*

Subject	Nation	System	Diff	Nation		Diff	System		Diff
				Black	White		Black	White	
Reading	261	272	-11	242	270	-28	258	278	-20
Math	276	285	-9	252	287	-35	270	293	-23

Table 9

*2009 4<sup>th</sup> Grade NAEP Reading and Math Scores*

Subject	Nation	System	Diff	Nation		Diff	System		Diff
				Black	White		Black	White	
Reading	220	228	-8	204	229	-25	218	234	-16
Math	239	240	-1	222	248	-26	229	245	-16

Table 10

*2007 4<sup>th</sup> Grade NAEP Reading and Math Scores*

Subject	Nation	System	Diff	Nation		Diff	System		Diff
				Black	White		Black	White	
Reading	220	229	-9	203	230	-27	218	235	-17
Math	239	240	-1	222	248	-26	227	246	-19

Table 11

*2005 4<sup>th</sup> Grade NAEP Reading and Math Scores*

Subject	Nation	System	Diff	Nation		Diff	System		Diff
				Black	White		Black	White	
Reading	237	239	-2	220	246	-26	227	245	-18
Math	217	226	-9	199	228	-29	218	232	-14

Table 12

*2003 4<sup>th</sup> Grade NAEP Reading and Math Scores*

Subject	Nation	System	Diff	Nation		Diff	System		Diff
				Black	White		Black	White	
Reading	216	224	-8	197	227	-30	214	230	-16
Math	234	237	-3	216	243	-27	227	242	-15

The Achievement Gap in scores between the participating system's European and African American students indicate a significant difference in the achievement level between these students (NAEP, 2011). The participating system annually assesses its students using the TerraNova, Third Edition. The TerraNova, Third Edition (CTB/McGraw-Hill LLC, 2011) is used by the participating system for its annual assessment of all students. NAEP testing has shown minority students within the system as consistently being ranked within the top ten in the nation in achievement (Smrekar &

Owens, 2003). NAEP testing has also shown that minority students consistently score below that of their European American peers within the participating system. A search of the literature revealed an absence of studies comparing achievement gaps existing in TerraNova testing throughout the system.

Disaggregated scores from one middle school in the participating school district were examined (Table 13). The school serves a diversified school population. The school has approximately 750 students in grades 6 to 8. The school's population is comprised of 19% African Americans, 7% Hispanic, 9% Asian Americans, 63% Caucasian, and 2% other. There are approximately 65 classroom teachers. The goal of the district in 2004-2005 was to have 75% of the school population in the top two quartiles of achievement. This school shows a gap in scores between African American and European American students.

Table 13

*2005 Terra Nova Disaggregated Percentile Scores for X Middle School*

Subject	White	Black	Difference 2005	Male	Female	Difference 2005
Reading	78.31	66.02	-12.29	67.32	82.09	-14.77
Language	78.93	67.96	-10.97	71.83	82.35	-10.52
Math	73.97	51.46	-22.51	70.14	70.86	-.72
Science	73.83	52.69	-21.14	73.38	69.52	-3.86
Social Studies	76.24	62.14	-14.1	75.00	54.65	-20.35

## **Participating System Strategic Plan**

The participating system's Community Strategic Plan states that 75% of all students in grades 3 to 11 will perform "At the Standard" level or higher (the top two quarters) on a system-wide, norm-referenced assessment. Seven percent or less will perform "Below the Standard" level (the bottom quarter). All students will perform "At the Standard" level or higher in reading (at grade level) by the end of grades 3, 6, and 9. All pre-K-2 students will perform "At the Standard" or higher on developmentally appropriate measures (<http://system.edu/pubs/csp2006.cfm?cId=g1>). These were the stated goals in 2006 and currently these goals have morphed into "students will demonstrate one year's academic growth as measured with diagnostic/criterion-referenced assessments" (<http://system.edu/pubs/csp2008.cfm?cId=g1#obj1>).

Nearly half of the students within the system are considered minority students. Minority students account for 44.9% of the total enrollment. Given this diversity, it is important for the system to understand the causes of lower test scores for minority students, in particular African-American and Hispanic students.

## **Purpose of the Study**

The first purpose of this study was to determine if African American students' TerraNova, Third Edition (McGraw-Hill, 2009) reading and math scores, the main norm-referenced test used by this school system, were significantly lower than European American students at middle schools within this school district. A second purpose of the study was to determine whether eighth grade African and European American students' TerraNova reading and math subtests scores could be predicted through the use of race

(African American and European American), gender, or special education status. The rationale for the study was based on the assumption that everything in the participating system was equal. Students had equal access to curriculum, teachers, tutoring services, and anything else they needed for academic success.

Once a student is part of the participating system, there are few differences but those that should be noted include socioeconomic status, level of education for parents, branch of service, rank, home life, and school environments. One other difference was gender. This was apparent as the prevailing attitude is that boys perform much better than girls in the areas of science and math. A search of the literature revealed an unbalanced and incomplete record of studies comparing achievement gaps existing in TerraNova testing between minority groups

### **Research Questions and Hypotheses**

Based on the background of the problem and the purpose of the study sections above, the following research questions guided the study:

RQ1: Was there a significant achievement gap in 2009/2010 TerraNova, Third Edition Reading and Mathematics scores between European American and African American students at the eighth grade level?

Ho1: There will be significant achievement gap between European American and African American students at the eighth grade level.

Ha1: There will be no significant achievement gap between European American and African American students at the eighth grade level.

RQ2: Which, if any, of the following factors, race (European American and African

American), gender, and special education status, will significantly predict 2009/2010 reading achievement in the eighth grade?

Ho2: Race, gender, and special education station will significantly predict reading achievement in the eighth grade.

Ha2: Race, gender, and special education status will not significantly predict reading achievement in the eighth grade.

RQ3: Which, if any, of the following factors, race (European American and African American), gender, and special education status, will significantly predict 2009/2010 math achievement in the eighth grade?

Ho3: Race, gender, and special education status will not significantly predict math achievement in the eighth grade.

Ha3: Race, gender, and special education status will significantly predict math achievement in the eighth grade.

### **Significance of the Study**

Minority achievement lags behind that of European Americans in the participating system and, therefore, it impacts the entire system in reaching the stated mission and one of the guiding principles of the system: "Success for All Students." Results of the study have implications for all stakeholders within the system. Students are affected based on the instructions they receive. Teachers are affected based on the type of student they encounter through a school day knowing they will need to differentiate instruction to reach all students.

## Definition of Key Terms

Listed below are operational definitions for terminology used in the following chapters. The definitions are provided to ensure clarification and understanding.

***Achievement gap.*** Achievement gap refers to the observed disparity of a number of educational measures between the performance of groups of students, especially groups defined by gender, race/ethnicity, and socioeconomic status. In this study, the disparity between African American and European American students was observed.

***Black or African-American student.*** For this study, a Black or African American student will be any parent, guardian or student who has self-identified their child as a person having origins in any of the black racial groups of Africa through the School Management System (SMS).

***Ethnicity.*** The participating system method of disaggregating ethnicity follows: A Hispanic or Latino is a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race, excluding Hispanic or Latino designations.

***European American.*** A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

***Participating school district.*** The participating school system is one district within a non-U.S. region of the school system. The district is the largest in the system with a student population of 9,531 students, Sure Start through grade 12.

***Participating school system.*** The participating system operates schools throughout the U.S. and the world. It services 83,813 students, operates 191 schools in 14 districts in 12 foreign countries, 7 U.S. states, Guam, and Puerto Rico.

***School Management System (SMS).*** A student information system (SIS) is a software application for educational establishments to manage student data.

***White.*** A person having origins in any of the original peoples of Europe, the Middle East, or North Africa, herein referred to as European American.

### **Summary**

Chapter 1 was a presentation of the problem of a lack of data concerning academic achievement gaps between African American students and European American student in a participating school system. The purpose of the study and the primary research questions and hypotheses were cited. The following chapter is a discussion of achievement gaps and ramifications thereof. Chapter 3 is intended to provide the experienced investigator with enough data to replicate the study. The research approach and design are detailed, and the procedures for the collection and analysis of data are described. As well, ethical considerations and the TerraNova testing protocol are discussed.

## **Chapter 2: Review of the Literature**

In examining the data related to the achievement gap within the participating system, a search was conducted of the literature using the online resource for educational research, Education Research Complete (EBSCO). The following search terms were used: education, African American, and achievement gap. This resulted in 248 publications. The term United States was added. This narrowed the group to 145. This represented a variety of different topics related to the subject of African American achievement and the achievement gap. Articles were found in the areas of teacher perceptions, teacher expectations, stereotype threats, racism, and gender differences. It was difficult to narrow the focus of this topic, as it appeared to have been studied thoroughly. The term “participating system” was added to the search, but only two reports were found with this search. Studies which focused on the historical background of the achievement gap, expectations and stereotype threats, and a review of the participating system were areas of interest. In the end, 30 different articles, studies, and reports were reviewed, all pertaining to aspects of the achievement gap. These articles, studies, and reports were chosen because these sources provided the researcher further knowledge on the topic of the achievement gap. This knowledge appeared to be applicable to the participating system being studied. Refer to Appendix A for Literature Review Matrix.

### **Review of the Studies**

In the following sections, articles, studies, and reports are reviewed. These were grouped in the following categories: historical studies, possible explanations of the

achievement gap, and system specific studies. Hispanic students were not included in this review. There were some studies that mentioned Hispanic students, but this was not the intent of the research or its focus. The focus of this research was to determine if significant differences existed between African and European American students.

### **Historical Background of the Achievement Gap**

The achievement gap between African and European-American students has been a problem since measuring student performance began early in the 20<sup>th</sup> century. The U.S. Army developed the world's first large scale mental test program in 1917. Jencks (1998) reported it was the first documentation of European Americans having higher IQ scores than African Americans. Some researchers have used this as evidence that European Americans were intellectually superior to African Americans. Others who believed that environment played a role in intelligence were not convinced and pushed for a hard look at America's educational institutions. In 1966 Congress commissioned a committee to "conduct a survey, as part of the Civil Rights Act of 1964, within 2 years of the enactment of the title, concerning the lack of availability of equal educational opportunities for individuals by reason of race, color, religion, or national origin" (Viadero, 2006, p. 10).

The Equality of Educational Opportunity, better known as the 1966 Coleman Report, was led by James S. Coleman and Ernest Q. Campbell (Coleman & Campbell, 1966). Coleman was a professor in the department of social relations at Johns Hopkins University and Campbell was at Vanderbilt University. The committee was commissioned to answer four questions posed by the Congress:

1. What is the extent to which the racial and ethnic groups are segregated from one another in the public school?
2. Do schools offer equal educational opportunities in terms of a number of other criteria which are regarded as good indicators of educational quality?
3. How much do students learn as measured by their performance on standardized achievement tests?
4. What is the relationship between a students' achievement and the kinds of schools they attend?

The report was the first extensive look at the educational performance of students across the U.S. and may also be considered the best known in American education. It was conducted at a cost of \$1.5 million. Data were drawn from 645,000 students, 60,000 teachers and 4,000 elementary and secondary schools across the nation. This report surveyed public school teachers, principals, district school superintendents, and pupils in grades 3, 6, 9, and 12 (Coleman & Campbell, 1966).

This commission was the first to look at what students were learning in schools as opposed to the resources that were being provided to schools. The commission referred to its purpose as looking at the outcome of students versus the inputs to schools. The authors of the report argued that the differences in achievement were attributed to a lack of equal educational opportunity. It argued that schools were not effective in meeting the needs of minority students. It also presented information that family background and the background of peers play a more important role than expenditures in a student's educational achievement. Many politicians felt the results indicated that funding for

schools could be reduced since schools might not matter as much as educators had thought (Viadero, 2006).

The Commission suggested that a more rigorous school curriculum and high disciplinary standards played a role in increasing student achievement. Issues of family background, a student's sense of control over his/her own destiny, and school segregation impacted a student's academic achievement (Viadero, 2006). The report noted an achievement gap of nearly 2 years by grade 6 and 4 years by grade 12. It was believed that what a school did to intervene in the achievement gap did very little to correct the achievement level of students. What did matter in schools were the verbal skills of the students' teachers. The quality of the teacher appeared to matter more to African Americans than to European American students.

Finally, the report concluded that those whom a student went to school with mattered. One conclusion, among many, was that poor black children did better academically in integrated, middle-class schools. This portion of the report spurred the use of busing as a solution to decrease the achievement gap. Busing African American students to white suburban schools was thought to be the answer to increasing achievement of African American students. This would allow African American students to gain access to better facilities, programs, teachers, and students if they were bused to majority European American schools. Each of these areas appeared to be more crucial to African American students than to European American students (Coleman & Campbell, 1966).

Others who have researched the achievement gap included Jencks and Phillips (1998). In their book, *The Black-White Test Score Gap*, they cited authors who argued that test bias, heredity, and home environment, the impact of schools and culture, and the relevance of test scores all contributed to the gap in achievement between African American and European American students. Jencks and Phillips concluded that a number of items must be addressed before African American children can compete successfully with European American students. First, parenting skills must be improved. Second, the pre-school experiences of African American students must be improved. The emphasis should be on cognitive development. Finally, the myth that the achievement gap between African and European Americans is genetic must be countered. Allowing this myth to permeate throughout a society relieves individuals from taking responsibility for their own education and allows others to use this as an excuse for not trying harder.

Nettles (2006) reviewed an extensive body of research examining the achievement gap between African and European American students. Nettles noted that in the U.S. school system, factors of heritability, oppositional culture, racism, socio-economic status, and family and school inequities have been historically identified as playing a role in explaining why African American students have not been successful in school. Nettles concluded there is a need for quality research to demonstrate that intelligence and achievement can change over time.

Nettles (2006) found little evidence that supported the theory of oppositional culture. Nettles found that the argument of racism held merit only in understanding the fact that 3% of white students have an African American teacher while 61% of African

American students have a white teacher. African Americans have less access to schools with a rigorous curriculum and attend schools where their teacher may not be certified or hold a degree in the subject area in which they are teaching. This was the same area of concern noted by the Coleman Report.

Nettles (2006) contended there was ample evidence to support the importance of involving the family in a student's education, but notes more research must be conducted regarding how the involvement of the African American family may contribute to the improvement of student achievement. Finally, Nettles suggested that schools need to push African American students towards higher level coursework in the areas of math, science, and reading.

Singham (1998) reviewed the 1996 SAT scores of African American students and European American students in the city of Shaker Heights, a suburb of Cleveland, Ohio, which is populated with a highly educated, diverse middle and upper middle class population. In 1996, African American students in Shaker Heights performed better than the national average on the SAT, 956 versus 856 nationally. However, their European American peers also scored above the national average, 1,198 compared to 1,049. This was the same school district with supposedly the same opportunities, but significantly different performance on the same test.

Singham (1998) discussed the myths surrounding the achievement gap. The typical explanations included (a) tests that do not match what is being taught, (b) less money spent to educate African American students, (c) low SES, (d) lack of motivation, (e) negative peer pressure, (f) lack of family support for education, and (g) teacher biases.

Singham discussed three views that researchers have used to explain the achievement gap: the socioeconomic model, the sociopathological model, and the genetic model. Each of these models provided an explanation as to why the achievement gap existed, none of which fully explained the phenomenon.

The socioeconomic model represents the view that the gap is a result of economic differences found between the races. Researchers and believers in this model feel the elimination of economic differences will propel African Americans to educational equality. A flaw in this model is that other minority groups that have entered the U.S., who may also be economically disadvantaged, perform better than African Americans in an educational setting.

In a sociopathological model, researchers look towards unstable families, poor parenting skills, lack of drive and ambition, negative peer pressure, poor choice of role models, high levels of teenage pregnancies, drugs and crime, and lack of parental involvement in children's education as the causes of poor achievement and lack of interest in education among African American students. Believers in this model feel that racial prejudice may exist, but that it is a personal matter and should be dealt with on a personal level.

The third model is genetic. This model assumes that achievement is linked to intelligence. Murray and Herrnstein (1994) pointed to an average 15 point gap in intelligence scores between African and European Americans. The authors made the claim that it was best to accept this fact and then determine how to minimize the impact

to the rest of society. Fortunately, there is little evidence that African American students are genetically inferior to European American students.

### **Expectations and Stereotype Threats**

A number of researchers have examined the role of the teacher and his or her expectations as an explanation for the achievement gap. This line of research began with the publication of Rosenthal and Jacobson's 1968 study. Rosenthal and Jacobson concluded when teachers expected students to do well and show intellectual growth, the students achieved more, and when teachers did not have such expectations, performance and growth did not occur.

Rubie-Davies (2007) explored the impact of ethnicity on teacher expectations and its relationship to student achievement. Rubie-Davies examined the expectations of teachers of Pacific Islanders, Asians, Maori, and New Zealander students. Rubie-Davies found a significant difference in the expectations that teachers had for Maori students compared to their expectations for other ethnic groups and concluded there was a possibility that a sustained negative expectation may have an adverse effect on student performance. The three studies presented by Rubie-Davies (2006; 2006; 2007) confirmed the hypothesis that teachers would present with a biased viewpoint of Maori students even in the face of conflicting information. In Rubie-Davies's experiments, Maori students would continually be placed in lower reading groups even when the students displayed a higher performance on reading assessments. Rubie-Davies concluded that if teachers have lower expectations for a certain group of students, the students may not receive the challenging work necessary for the acquisition of skills needed to make the

next academic step. Good and Nichols (2001) showed that students who were educated in lower level classes or were exposed to less challenging curriculum did poorly in comparison to other students in traditional classes.

Casteel (1997) found that students may perceive what they think the teacher is feeling even at the young age of five or six. Students may only strive to work to the level that they feel their teacher is expecting them to reach and not over reach goals set by the teacher. If the teacher sets the goal too low, then students may reach, but not surpass, the goal. It becomes a self-fulfilling prophecy for the student and the teacher (Good & Nichols, 2001). The impact of the teacher on what a student learns cannot be undervalued. The teacher decides what a student will read, the curriculum materials that will be used, and will evaluate the student. Teachers set the climate and expectations in the classroom (Good & Nichols, 2001). Students will know their position within that classroom: who are the line leaders, greeters, or those who complete errands within the classroom. These subtle tasks set the tone of the classroom for all students.

Even when faced with evidence contrary to their beliefs, teachers may attribute student success to the student being ready to learn or motivated to learn (Scharlach, 2008). When students do not make progress, the teacher may state the fault lies within the student: not being motivated, low socioeconomic status, lack of developmental readiness, a possible reading disability or poor behavior, and not in the instructional process. Researchers have studied the issue of expectations for over 40 years, and while there is evidence that teacher expectations do play a role in achievement, researchers continue to debate to what extent it may have an impact. Jencks and Phillips (1998)

observed teacher expectations may not explain the entire African-European American test gap, but the accumulating effect cannot be underestimated on a student as he/she journeys through 12 years of meeting or not meeting the expectations of teachers.

Another explanation for the achievement gap has been the introduction of the topic of stereotype threat (Steele & Aronson, 1995). Stereotype threat is the fear that one's behavior will confirm an existing stereotype of a group with which one identifies. This fear can affect performance. Stereotype threats are not limited to African American students, but to any group that faces a stereotype: Asians, women, older adults, persons with disabilities, or other groups. Steele and Aronson conducted research where African American and European American undergraduates were divided into three groups and each group was given a different purpose or reason for the assessment. One-hundred fourteen participants were randomly assigned to the three experimental conditions.

Each group of students was told they would be tested for a 30 minute time period with testing material from the verbal section of the Graduate Record Exam (GRE). The first group was told the results of the test would give an indication of the students' intellectual abilities. It would be concerned with the students' personal factors involving problems requiring reading and verbal reasoning abilities. This was told to invoke the "Stereotype Threat" for African American participants. The next group was told the exam was non-diagnostic and there was no reference to verbal ability. They were told the examiners want to better understand the psychological factors involved in solving verbal problems. The third group was asked to give a genuine effort on an extremely difficult task. They were asked to view the assessment as a challenge and to give a good effort.

African Americans in the first group performed significantly lower than African Americans in the latter groups. European Americans performed equally in both testing situations. It was the researchers' contentions that African American students tested poorly because of the fear of confirming the stereotype that African Americans were intellectually inferior.

Steele and Aronson (1995) asserted that even when African American and European American students have the same SAT scores, African American students have lower achievement than European students, a lower GPA, retention rate, and longer time to graduation while in college. African American students achieve less even when they have the same preparation. They concluded that the fear of confirming a stereotype in the mind of an examiner is enough to deflate test scores. Singham (1998) reviewed Steele and Aronson's research into poor academic performance of African American students and concluded that the power of stereotype does not have to be overt; it only needs to be present.

Steele and Aronson's 1995 study has been replicated in women's math at the high school and college levels (Ben-Zeev, Fein, & Inzlicht 2003; Delgado & Prieto, 2008; Good, Aronson, & Harder 2007). Each of the cited studies found that once a stereotype threat was removed from the testing situation, performance improved. The experimental group always outperformed the control group. Even when the stereotype threat was directed towards a group that had documented success, the group will tend to underperform.

Aronson, Lustina, Good, and Keough (1999) conducted a study with a group of European American math-proficient males. One group was told that their performance on an advance math exam would be compared to a group of Asian math proficient students while a control group was told nothing. This introduced a stereotype threat of Asians being better at math, and as predicted by the researchers, the European American group that was stereotyped threatened performed worse than the non-stereotyped control group. Aronson et al. also noted that those students who highly identify with the subject matter, who actually have an interest in the subject or topic being taught were the students that would be most likely not to publically engage in the activity or drop out altogether. These students would find some way of sabotaging their own learning so they would not have to face the possibility of failing at the task, therefore confirming the stereotype threat (Aronson et al., 1999).

### **Research about the Participating System**

Two major studies have been conducted on the participating system and both were positive in their review. Kingston (2002) and Smeakar, Guthrie, and Owens (2001) focused on minority performance. Smeakar et al. researched the positive qualities of the system. Smeaker et al. visited 15 middle schools across the U.S., Germany, and Japan. Visitations included five domestic locations and five overseas locations. Over a 4 month period, 130 interviews were conducted. The principal and language arts teacher were interviewed at each school. Military commanders, school liaison officers, curriculum specialists, assistant superintendents, and superintendents were also interviewed. Parents, assistant principals, school counselors, and teacher union leaders were interviewed at a

number of schools, but not all schools. The researchers reviewed school documents, which included testing information.

Smeaker et al. (2001) also reviewed school climate surveys administered to participating system students who took the 1998 National Assessment of Educational Progress,(NAEP) for Reading. The authors found 81% of students reported their teachers' expectations were very positive when compared to the national average of 58% of public school students about the same subject. When this number was analyzed by race, 85% of African American and 93% of Hispanic students reported teachers' expectations for student performance as being very positive as compared to 52% and 53% respectively in a national sample.

Kingston (2002), in reviewing Smeakar et al.'s work, offered eight reasons why participating system students performed so well. Kingston stated that the system offered centralized direction with the establishment of a 5 year strategic plan for all grades. Schools had a common curricula and standards. Decisions of what to emphasize in teaching appeared to be driven by the collection of data. Although a school exhibited flexibility in reaching set goals of the system, a child in Korea could expect to see the same curriculum and standards if moved to Germany.

The participating system is well-funded. There appears to be "sufficient financial resources" (Kingston, 2002, p. 64). Teacher salaries are competitive, expenditures per child are above the national average, and class sizes are comparable or better than the national average. An emphasis on professional development further expands the teaching skills of an already highly skilled teaching force. The concept of small schools was also

noted as a factor that might increase student achievement, although this may be a matter of luck as opposed to design. Schools appear to have a focus on high expectations.

Smeaker et al. (2001) identified teachers in participating system schools as serious about having high expectations and meeting this expectation no matter in which school a student might enter. There is an extensive Early Childhood Program, before school opportunities, and after school enrichment and remediation classes that provide coverage for students throughout the workday, a convenience for working parents. Finally, and perhaps most important, there appears to be a “corporate commitment to public education” (p. 66) by the military. The command makes it a point for families to be involved in their child’s education. This is true to the point that a military personnel’s place of duty on report card day is their child’s school. Kingston (2002) contended this corporate commitment to public education may influence student performance more than any other attribute and is one that cannot be replicated in public schools throughout the U.S. Despite this, minority achievement scores continue to lag behind that of their European American peers across the system.

### **Summary**

Many of the factors that have been used to explain the achievement gap, heredity (Jencks, 1998; Nettles, Millett, & Oh, 2006), oppositional culture, racism, socio-economic status, family status, and inequity of resources in a school (Nettles, Millett, & Oh, 2006) may not or should not be factors in a participating system school. The system has been touted as one of the best in the U.S. in terms of having the smallest gap in the achievement between African and European American students (Progress, n.a., 2007).

Further, there is unprecedented support provided by the military command (Smeakar et al., 2001). To date, there has been no research about the African American/European American achievement gap in the participating system. Therefore, the purpose of this study was to begin to explore the gap through a limited examination of Terra Nova reading and math scores in one district within the system.

A tremendous amount of research exists in the area of exploring the achievement gap between European Americans and African American students. The research presented in the review of literature confirms that educators continue to be confused as to why it is so difficult to mitigate this barrier. The participating system offers an opportunity for educators to research what may or may not work in this area for improving student achievement. The participating system, when compared to schools in the U.S., is doing better in this area than most schools across the country (Progress, n.a., 2007). This means that something is working in the system, and even though it is not perfect, it does offer researchers and educators an opportunity to find out what works in areas that are not working, and to continue to work on closing the achievement gap between racial groups.

### **Chapter 3: Methodology**

This chapter presents the methodology that was used to address the specific questions guiding this research. The first purpose of this study was to determine if African American students' TerraNova (TN), Third Edition (McGraw-Hill, 2009) scores, the main norm reference test used by the participating system, were significantly lower than European American students at middle schools in this school district. This study focused on comparing the academic performance of eighth grade African American and European American students and determining if a significant achievement gap existed between African and European American eighth grade students in the areas of reading and math based on results from the TN 2009-2010. A second purpose of the study was to determine whether eighth grade African and European American students' TerraNova, Third Edition reading and math subtests scores could be predicted through the use of race (African American and European American), gender, or special education status.

This chapter was divided into six sections: restatement of the research questions, description of the design of the study, participants/sample, and data collection instruments/tools, data analyses procedures, and IRB and DODDS confidentiality.

The following research questions guided the study:

1. Was there a significant achievement gap in 2009/2010 TerraNova, Third Edition Reading and Mathematics scores between European American and African American students, at the eighth grade level?
2. Which, if any, of the following factors, race (European American and African

American), gender, and special education status, will significantly predict 2009/2010 reading achievement in the eighth grade?

3. Which, if any, of the following factors, race (European American and African American), gender, and special education status, will significantly predict 2009/2010 math achievement in the eighth grade?

### **Design of the Study**

This was a descriptive and exploratory study designed to compare disaggregated TerraNova reading and math subtest of eighth grade students within a participating school district. The dependent variables were the Normal Curve Equivalent (NCE) scores on the reading and math subtests of the TerraNova, Third Edition (McGraw-Hill, TerraNova, Third Edition, 2009) grade level tests. The independent variables for this study were race (African American/European American), gender, and special education status.

### **Sample**

The initial sample used in this study was comprised of all eighth grade students enrolled during the 2009-2010 school year in middle schools within one school district in the participating system. This school district was the largest school district in the system. The district enrolled 9,531 students in 2009-2010 (System, Enrollment, 2011). African American students represent 13% of the district's population. European American students represented 56% of the schools' population. The student population of the schools consisted of 55% Air Force, 29% Army, and 14% civilian students of which 51% were males and 49% were females. The students enrolled in these schools attended

because a parent had some connection with the Department of Defense (DOD). There were seven middle schools in the district, and a total of 635 eighth graders were officially enrolled during school year 2009-2010 at the time the TN was given in the Spring of 2010 (System, Enrollment, 2011).

Data for this study were obtained from the participating system's Headquarters. A request was made to the research division for Terra Nova test score data for all students in the target grades including each student's ethnicity, race, gender, and special education status. The reading and math scaled and NCE scores of all eighth graders in the participating school district were sent electronically in EXCEL format. The data were then imported into the Statistical Package for the Social Sciences 19.0 (SPSS, 2010).

Students who did not have data on all the independent variables used in this study were not included in the analyses. As a result, 625 students with both reading and math scores were included. These students were then sorted into six racial and ethnic groups and a group whose parents declined to identify the child's race/ethnicity. The participating system assigns race or ethnicity based on the following categories:

***American Indian or Alaska Native.*** A person having origins in any of the original peoples of North and South America (including Central America), and who maintains tribal affiliation or community attachment.

***Asian.*** A person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent including, for example, Cambodia, China, India, Japan, Korea, Malaysia, Pakistan, the Philippine Islands, Thailand, and Vietnam.

***Black or African American.*** A person having origins in any of the black racial groups of Africa.

***White.*** A person having origins in any of the original peoples of Europe, the Middle East, or North Africa.

***Native Hawaiian or Other Pacific Islander.*** A person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands. Ethnicity is divided by Hispanic or Not Hispanic.

***Hispanic or Latino.*** A person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin, regardless of race. NOT Hispanic or Latino.

For the purpose of this study, Hispanic and non-Hispanic were not included.

### **TerraNova Test Scores**

The NCE TerraNova, Third Edition (McGraw-Hill, 2009) reading and math eighth grade subtest scores were used as measures of reading and math achievement. The TerraNova (McGraw-Hill, 2009) is a nationally norm referenced and standardized achievement test used in the U.S. to assess K-12 student achievement in reading, language arts, mathematics, science, social studies, vocabulary, and spelling. The TerraNova is part of the standardized assessments conducted by the participating school system and is given every Spring in grades 3 through 11. Normal Curve Equivalent scores from reading and math subtests were obtained from system Headquarters and were used as the primary means for analyzing the data.

The Normal Curve Equivalent (NCE) scale ranges from 1 to 99, and coincides with the National Percentile scale at 1, 50, and 99. Normal Curve Equivalents have many of the same characteristics as percentile ranks, but have the additional advantage of being based on an equal-interval scale. The difference between two successive scores on the scale has the same meaning throughout the scale. This property allows for meaningful comparisons among different achievement tests. The Mean Normal Curve Equivalent (MNCE) is computed by adding the Normal Curve Equivalent scores of all students in a group, then dividing by the number of students in that group (System, 2010)

### **Data Analyses Procedures**

In answering the first question, SPSS 19.0 (SPSS, 2010) was used to determine if there was a significant difference in mean NCE reading and math scores on the TN. Three types of analyses were performed on the data. First, basic descriptive and frequency statistics were examined for mean NCE of reading and math and each of the independent variables. A Multivariate Analysis of Variance (MANOVA) was conducted to determine if there was a significant difference between the following groups: African and European Americans, gender, and special education status, and reading and math scores. The MANOVA reduces the probability of a Type I error (rejecting the null hypothesis) when it is in fact true. It also allows the researcher to determine the effects of multiple independent variables on two or more dependent variables. A MANOVA takes into account the intercorrelation among the dependent variables.

The level of significance for the MANOVA was set at .05. Once the MANOVA determined there was a significant difference in racial groups, a Bonferroni Correction

Factor was applied to control for inflated Type I error. A multiple comparison was applied to the analysis. A Bonferroni adjustment was conducted on the independent variable of race. The Bonferroni adjustment was created to stop researchers from over-analyzing data. It reduces the chance of concluding two means differ when they really do not. The Wilks Lambda was chosen as the test statistic. It is as robust and has as much test power as the other three test statistic found in SPSS (Field, 2009). It is considered the standard.

Finally, a forced entry method regression analysis was used to answer Research Questions 2 and 3. A forced entry method is a method in which all predictors are forced into the model simultaneously. The researcher makes no decisions as to the order in which variables are entered. Some researcher believe this method is the only appropriate method for theory testing because stepwise techniques are influenced by random variations in the data, and thus, seldom give replicable results if the model is retested (Field, 2009). This regression analyses determined the relative strength of the relationship between the independent variables: European and African American students, male and female students, and special education and non-special education students, and the dependent variables of NCE reading and math scores.

Dummy variables were created for Race, Gender, and Special Education Status. Based on the multiple comparisons completed in the MANOVA, Special Education status displayed the greatest amount of variability. In the area of race, African American students presented with the next largest variability, and in the area of gender, neither male nor female results showed a significant difference in scores.

### **IRB and SYSTEM Confidentiality**

After Institutional Review Board review, this study was deemed to be one of minimal risk to participants as determined by the U.S. Federal Government Department of Health and Human Services (2009) regulation 45 CFR § 46.10, which states the probability and magnitude of harm or discomfort anticipated in the research should not be greater in and of themselves than any ordinarily encountered in daily life, or during the performance of routine physical or psychological examinations or tests.

To conduct this study, permission was obtained from the participating system's Headquarters. A request was made for access to TerraNova data. The data received did not have any identifying information. Files were stripped of all names and identifiers.

### **Summary**

This chapter presented the methods used to address the three research questions. The study design was descriptive and exploratory and involved an analysis of archival data obtained from Headquarters. Results of the data analyses are presented in the following chapter.

## **Chapter 4: Results**

The first purpose of this study was to determine if African American students' TN scores, the main norm reference test used by the system, were significantly lower than European American students at middle schools within the examined school district. Specifically this study focused on the TN eighth grade reading and math subtests and compared the performance between the two groups: African American and European American students. A second purpose of the study was to determine the degree to which race (African/European American), gender and special education status predicted reading and math achievement. This chapter will present the results of the data analyses that addressed the three research questions that guided the study. Results are organized by questions.

### **Research Question 1**

The first research question of this study addressed the achievement gap in TerraNova, NCE Third Edition Reading and Mathematics scores between European American and African American students at the eighth grade level in the School District. First, descriptive statistics for the entire sample are presented in Table 18. Most of the participants (62.2%) were White, with 16.5% African American, 10.4% biracial or multiracial, and 4.8% Asian Americans. The groups of Asian American, American Indian, Hawaiian/Pacific Islander, Biracial/Multiracial and Declined to State were combined in this study to form a group Other. The African and European American groups account for 492 (78.7%) of the students in the study.

Table 14

*Racial Distribution for Sample (N = 625)*

Race	N	Percentage
White	389	62.2
African American	103	16.5
Other	129	20.6
Missing	4	.6

Table 15 shows the gender breakdown for the sample. There were more males (53.6%) than females (46.4%) in this sample. The distribution of special education and non-special education students is shown in Table 20. Special education students composed only 7.5% of the district's school population.

Table 15

*Gender Distribution for Sample 2009-2010 (N = 625)*

Gender	N	Percentage
Male	335	53.6
Female	290	46.4

Table 16

*Special Education Distribution for Sample 2009-2010 (N = 625)*

Category	N	Percentage
Non-Special Education	578	92.5
Special Education	47	7.5

Table 17 shows descriptive statistics for reading scores as a function of race, gender, and special education status. In all cases, the special education students scored lower than the non-special education students of the same gender and race. The best performing group consisted of White female non-special education students ( $M = 64.79$ ,  $SD = 14.78$ ), followed by White male non-special education students ( $M = 64.30$ ,  $SD = 13.83$ ). The worst performing groups were the African American female special education students ( $M = 36.75$ ,  $SD = 14.84$ ), followed by African American male special education students ( $M = 37.33$ ,  $SD = 12.50$ ).

Table 17

*Mean TN NCE Reading Scores as a Function of Race, Gender, and Special Education Status for 2009-2010(N = 625)*

		Females				Males			
		Non Special	N	Special Education	N	Non Special	N	Special Education	N

	Education			Education				
White	64.79 (14.78)	163	48.43 (14.20)	9	64.30 (13.83)	200	50.71 (16.26)	14
African American	58.44 (14.58)	39	36.75 (14.84)	4	58.72 (13.44)	57	37.33 (12.50)	3
Others	61.23 (12.52)	61	42.75 (12.52)	7	63.15 (15.22)	52	38.44 (10.62)	9

*Note.* Standard deviations are presented in parentheses.

Table 18 contains descriptive statistics for the mathematics scores. Again, in all cases the special education students performed worse than the non-special education students from the same racial and gender subgroup. White male non-special education students performed better than any other group ( $M = 64.15$ ,  $SD = 12.87$ ), followed by “other” racial group male non-special education students ( $M = 62.54$ ,  $SD = 15.66$ ). The worst performing groups were the African American female special education students ( $M = 30.25$ ,  $SD = 13.02$ ) followed by the African American male special education students ( $M = 34.67$ ,  $SD = 3.51$ ).

Table 18

*Mean TN NCE Math Scores as a Function of Race, Gender, and Special Education Status for 2009-2010 (N = 625)*

	Females				Males			
	Non Special Education	N	Special Education	N	Non Special Education	N	Special Education	N

White	61.92 (14.60)	163	43.00 (13.44)	9	64.15 (12.87)	200	48.57 (14.41)	14
African American	57.44 (16.76)	39	30.25 (13.02)	4	56.93 (11.52)	57	34.67 (3.51)	3
All others	60.67 (13.85)	61	37.75 (15.13)	7	62.54 (15.66)	52	36.11 (9.49)	9

*Note.* Standard deviations are presented in parentheses.

To determine if the effect of race, gender, and special education status on reading and math achievement scores was statistically significant, a multivariate analysis of variance (MANOVA) was performed. Table 23 presents the results from this analysis. A Wilks' Lambda was used to determine the statistical significance of each test. The effect of race was statistically significant,  $F(4, 1218) = 3.02, p = .017$ . Univariate follow up tests for the effect of race were statistically significant for reading scores,  $F(2, 610) = 4.21, p = .015$  and for math scores,  $F(2, 610) = 5.47, p = .004$ . For reading scores, Bonferroni follow up tests indicated that Whites performed better than African Americans for both reading ( $p = .026$ ) and math scores ( $p = .007$ ), but that neither of these two groups differed from those in the "other" race category.

Table 19

*Multivariate Analysis of Effects of Race, Gender and Special Education Status on TN Reading and Math Scores (N = 610)*

Effect	<i>F</i>	<i>df</i>	<i>p</i>
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Race	3.02	4, 1218	.017
Gender	.39	2, 609	.676
Special education	47.18	2, 609	<.001
Race X Gender	.20	4, 1218	.937
Race X Special education	.76	4, 1218	.555
Gender X Special education	.08	2, 609	.926
Race X Gender X Special education	.50	4, 1218	.735

---

Gender did not have a statistically significant effect,  $F(2, 609) = .39, p = .676$ . The effect of special education status was statistically significant,  $F(2, 609) = 47.18, p < .001$ .

Univariate tests indicated that non-special education students performed better than special education students in both reading ( $p < .001$ ) and math ( $p < .001$ ). None of the interaction effects were statistically significant.

### **Research Question 2**

The second research question addressed the effects of race, gender, and special education status on reading achievement in the 8th grade. All of the independent variables were placed into SPSS regression, with dummy coding used for race with “other” as the reference category. The two dummy variables for race were coded as follows: for White race, 0 = not White race, 1 = White race; for African American race, 0 = not African American, 1 = African American. The results from this regression analysis are shown in Table 24. Overall, the regression model was statistically significant,  $R^2 =$

.14, adjusted  $R^2 = .13$ ,  $F(4, 619) = 24.94$ ,  $p < .001$ . The  $R^2$  value of .14 indicated that 14% of the variance in math scores was explained by race and special education status in the model. Individually, two of the predictor variables were statistically significant. First, being White was associated with higher reading scores,  $\beta = .10$ ,  $p = .036$ . This indicated that White students tended to have higher scores than those in the “other” race category. Second, being in special education was associated with lower reading scores,  $\beta = -.33$ ,  $p < .001$ .

Table 20

*Results from Regression Analysis for Research Question 2 - Reading (N = 624)*

	<i>B</i>	<i>SEB</i>	$\beta$	<i>t</i>	<i>p</i>
Constant	80.40	3.24		24.97	<.001
Race					
White race	2.98	1.42	.10	2.10	.036
African American race	-3.34	1.85	-.08	-1.81	.071
Gender	-.15	1.13	-.01	-.13	.895
Special education	-18.87	2.14	-.33	-8.82	< .001

*Note.*  $R^2 = .14$ , adjusted  $R^2 = .13$ ,  $F(4, 619) = 24.94$ ,  $p < .001$ .

### **Research Question 3**

The third research question asked which, if any, of the following factors, race, gender, and special education status significantly predicted math achievement in the 8th grade? All of the independent variables were placed into SPSS regression with all

variable coding identical to that for the second research question. Table 25 shows the results from this analysis. Overall, the regression model was statistically significant,  $R^2 = .16$ , adjusted  $R^2 = .16$ ,  $F(4, 618) = 30.31$ ,  $p < .001$ . The  $R^2$  value of .16 indicated that 16% of the variance in math scores was explained by race and special education status in this model. Individually, two predictors were statistically significant. First, being of African American race was associated with lower math scores,  $\beta = -.11$ ,  $p = .016$ . Second, being in special education was associated with lower math scores,  $\beta = -.36$ ,  $p < .001$ .

Table 21

*Results from Regression Analysis for Research Question 3 (N = 623)*

	<i>B</i>	<i>SEB</i>	<i>B</i>	<i>t</i>	<i>p</i>
Constant	84.59	3.20		26.48	<.001
Race					
White race	2.20	1.40	.07	1.57	.118
African American race	-4.39	1.83	-.11	-2.41	.016
Gender	-1.81	1.12	-.06	-1.63	.105
Special education	-20.78	2.11	-.36	-9.84	<.001

*Note.*  $R^2 = .16$ , adjusted  $R^2 = .16$ ,  $F(4, 618) = 30.31$ ,  $p < .001$ .

## **Summary**

This chapter presented the results of the analyses conducted to respond to the three research questions. Overall, results confirm that there is a significant difference in TN math and reading scores between European and African American eighth grade students. Most of the variability can be found in special education placement. These findings are discussed in the following chapter.

## **Chapter 5: Discussion**

This chapter presents a summary of the findings of the study and discusses these findings. Implications for practice and recommendations for further research are presented.

### **Summary of Findings**

The purposes of this study were to determine if there were significant differences in TN reading and mathematics scores between eighth grade European American and African American students in one district within the participating system. A second purpose was to determine which, if any, of the following factors, race, gender, and special education status, significantly predict reading and math achievement in the eighth grade. Results of the multivariate analyses of reading and mathematics scores indicated there were significant differences in both areas at the  $p < .05$  level. The gap is significant and is also evident on the NAEP.

There were no significant differences in achievement between males and females. Mean NCE reading scores were nearly equal (61.67 for males and 61.60 for females). Similarly, the NCE mathematics scores differed slightly but there were no significant differences (60 for males and 59.33 females). Questions 2 and 3 explored the extent to which race, gender and special education independently and together predicted NCE reading and mathematics scores. Interestingly, the combination of variables accounted for a total of 14% of the variance in reading scores among students and 16% of the variance in math scores. Most of the variance can be attributed to placement in special education. This means that almost 80-85% of the variance scores was unexplained and

could be a factor of prior instruction or any number of other variables known to relate to reading or math achievement.

As a consequence of the results, the following can be concluded:

1. Ho1: There will be significant achievement gap between European American and African American students at the eighth grade level. The hypothesis is accepted.
2. Ha1: There will be no significant achievement gap between European American and African American students at the eighth grade level. The hypothesis is rejected.
3. Ho2: Race, gender, and special education status will significantly predict reading achievement in the eighth grade. Race and special education status will predict reading achievement in the eighth grade. Gender does not.
4. Ha2: Race, gender, and special education status will not significantly predict reading achievement in the eighth grade. The hypothesis is rejected.
5. Ha3: Race, gender, and special education status will significantly predict math achievement in the eighth grade. Race and special education status will predict math achievement in the eighth grade. Gender does not.
6. Ho3: Race, gender, and special education status will not significantly predict math achievement in the eighth grade. The hypothesis is rejected.

### **Discussion of the Findings**

The results of the analyses research are consistent with previous research that has documented the significant differences between African and European American students in the areas of reading and math. First, the results were not surprising. Based on

previous observations of TN test scores for reading and math, the results were not surprising. Rarely, if ever, have scores been observed, in the participating school system, where African American students may have equaled or outscored European American students on any achievement test. It has been contended that there should not be a gap or the gap should not be significant because of the support that is provided in the participating school system. But there is a gap and this gap is significant. The reason for the difference in scores could not be explained fully because of race, gender, or special education status.

In the review of literature, 40 years ago, the Coleman Report identified problems for low achievement (Coleman, 1966), one being the quality of instruction and teacher. This participating school system has taken the initial steps in ensuring that all students will be successful in school with the use of differentiation of instruction system wide. The participating school system has also begun to recognize the importance of professional development that is continuous and ongoing for all of its teachers, which is another component recognized by the Coleman Report.

Although the participating school system serves diverse students, it is not apparent that the professional development practices or other policies explicitly recognize the achievement gap between African and European American students, it would only support to build positive relationships with all the stakeholders in their program. This program would encourage the recognition of diversity within the participating school system and promote differentiation of instruction within the classroom. The aim of the program is to raise teachers' awareness of how they treat their students and the

importance of building this relationship, especially for minority students. This program is not to supersede a teacher's knowledge of content, which is the focus for student achievement (Ferguson, 2003), if a teacher cannot connect with the student, it does not matter what he/she knows if they cannot get the information to the student. These two components will not only benefit African American students, but all students within the system. Teacher expectations cannot be ignored as noted by Rubie-Davies and her work with the Maori people of New Zealand. Her research results cannot be disregarded. Teachers will sometimes believe what is not true, even when faced with undeniable evidence to the contrary (Rubie-Davies, 2007; Rubie-Davies, Hattie, & Hamilton, 2006).

However, not all of the performance differences between African American and European American students can be explained by teacher-student relationships and expectations. Lower performance is a much more complicated matter as Nettles pointed out in his report (Nettles, Millett & Oh, 2006). Points that may be applicable to the participating system studied would include the following:

1. Oppositional culture and informing educators that the evidence supporting the idea that African American students do not perform well because of a fear in being perceived as white is not as strong as we have been led to believe.

2. Racism and the need to attract more African American teachers to the school system. 86% of the teachers in this system are white and 73% female. Students need to see more minorities and males in the participating school system. African American students also need to have the opportunity to participate in more rigorous curriculum. An informal look at Advanced Placement classes in a high school showed an under

representation of African American students within these higher level classes. Students, particularly African American students need to be encouraged to enroll and succeed in these types of classes.

3. Socio-economic Status and the possibility that the participating school system may have to address poverty issues in regards to lower performing students. In the book, “Understanding Poverty” by Dr. Ruby Payne, she points out that it is difficult to move from lower class to middle class and to understand all of nuances in making this a successful transition. (Payne, 2005) A number of students enter the participating school system each year. Their socio economic history or background is not readily known. The possibility exists that some of these student may be those who are making that transition from lower socio economic to middle class. If this were the case, then support structures would need to be in place to help students and parents in navigating how to do school successfully.

4. The family and how little is really known about African American families and their capabilities in improving their children’s educational achievement and closing the educational gap.

5. The participating system itself in strengthening the effectiveness of teachers of African American students, understanding the use of assessment results in order to develop plans for improving student performance.

6. Communicating about the gap with parents, teachers, administrators and students. This would involve an open forum regarding the results of standardized testing and the impact these results have on children. This would be done in alignment with the

NAEP, which is given once every two years. Stakeholders would then be able to complete a comparison of their school's progress and that of any other state.

Singham (2005) has also pointed out the convenience of simple solutions in solving the achievement gap but also notes that it is far from simple. Singham also notes that although African Americans are lagging behind in the acquisition of academic knowledge and skills, European Americans are not that far ahead. Singham has equated learning in school to running a race where everyone is running slowly, including European American students. African Americans' performances are the first sign that something is dreadfully wrong with the school system.

Aronson's (2004) observations of stereotype threats are intriguing. Aronson et al. (1999) looked at underachievement in a different way. Stereotype threat was defined earlier, but it refers to the fear that one's behavior will confirm an existing stereotype of a group with which one identifies. African Americans have a stereotype of being poor performers in school. This may lead to the student having test anxieties related to his or her performance, which leads to a lower score on the test. This explanation may not account for a great deal of the variability in the performance of African Americans. However, it does suggest that African American students may need to be mentored and helped to understand that intelligence and achievement are malleable. Success can be found through hard work. These are important messages for young people to hear and one that the system is more than capable of sending. (Good, Aronson, & Inzlicht, 2003)

Finally in reviewing the two positive outside observations of the system (Kingston, 2002; Smeakar, 2001), the reports noted the support of military leaders in

helping to make the schools work as well as they do. For instance, when the military tells its soldiers that his or her place of duty is at school on report card day, this says a great deal. The military understands the importance of education. The leadership understands the benefit they are afforded by being able to tell a prospective recruit that the school system is in the top ten in academic performance across the United States. There can be no better selling point to a military person than to know that his/her children are well cared for if there is a deployment in his or her career. While the military has been receptive to its role in support of the school system, next steps should be to allow a thorough review and research of the school system.

### **Implementation**

What was surprising is that in the regression model, the variable of race played a small role in predicting how a student may or may not perform on the Terra Nova. It should be noted that the regression models did not include all variables that may be predictive of reading or math achievement. The regression model did not explain over 80% of the variance in scores. Therefore other factors are involved. Additional predictors included in future studies and may include income, rank, parent education, and a look at student progress across a period of time while in the same school system.

Parents' rank would be a substitution for Social Economic Status and possibly education level. Being an officer or an upper level Non-Commissioned Officer (NCO) in the military requires more education and at the same time increased income level. An easy assumption that could be made would be that those students who had higher ranking parents would be the same students with higher achievement. It would also be interesting

to see if there were any correlations with African American families as well in regards to rank; would African American families with higher ranks, score better on TN? Is there a significant difference between these students and their European American peers?

Another question would be does branch of service play a role in achievement?

There continues to be an unofficial assumption that Army students do not perform as well as Air Force students. Would there be a difference in the TN scores for these students? Would there be a significant difference between African American Army students and African American Air Force students? Is there a significant difference in achievement in regards to race based on the branch of service and rank between African and European American students?

Finally, a look at achievement as a cohort group over time for African and European American students would provide an opportunity to see how these students fare when educated through the system over a time period. A number of these students have been educated by the system from kindergarten through 12<sup>th</sup> grade. This would provide an excellent look at students whom the system has solely been responsible for educating. Comparisons could be made to see if any significant differences exist in African and European TN reading and math scores over a period of time. The assumption would have to be that no significant differences would be found.

### **Limitations of the Study**

This study had the following potential limitations. The sample was limited to one school district of the participating school system and may not be representative of the entire participating system. Also, the sample was limited to one middle school grade

level and findings may not be representative of other grade levels. Sample size of the special education population was small and may be misleading in its achievement results. Rank and branch of service were not identified. This limited the information of income and education level of parents from the study. There has to be a process where these two items can be thoroughly studied so that a better idea can be had of student achievement within this school system.

### **Recommendations for Further Research**

The participating school system has a history of delivering a quality education to its students as evident of the NAEP scores provided every two years in the areas of reading and math. (Progress, N.A., 2007) This study suggests that there is a significant difference in reading and math scores for African and European American students within the participating school system. Until these differences can be adequately explained, they cannot be ignored. These differences cannot be fully explained by race, gender or placement in special education. The participating school system will have to look closely at some of the other factors that relate to achievement. Specifically, rank of parent and branch of service would be important variables for a researcher to study as they relate to achievement. These are important as are income or level of education of parents. These and other factors may help better explain the difference in scores between African American and European American students and in turn may help the system find ways to improve student performance on system wide assessments.

## APPENDIX A: LITERATURE REVIEW MATRIX

Study	Problem	Purpose	Sample/ Participants	Independent Variables	Dependent Variables	Design	Procedures	Analysis	Results	Contribution to your research study
<b>Study #1</b> Rubie-Davis, Hattie & Hamilton 2006	Teacher expectations have shown to have an effect on student achievement	Explore differences in teachers' expectations and judgments of student performance	540 students of 21 primary teachers in Auckland schools. 261 being New Zealand Europeans; 88 Maori, 97 Pacific Islanders and 94 Asians	Teacher expectation survey of reading levels of students	Reading levels actually achieved by students through running records	Surveys for teachers/running records for students comparison of the two scores	Beginning of the school year teachers completed a survey related to their expectations of students reading levels. At the end of the year teachers judged the reading levels their students had actually achieved through running records.	Study shows that ethnicity may be a factor in teachers' expectations independent of social class and student achievement. Teachers had expectations for Maori students below that of any other ethnic group	Maori students made the least gain of all ethnic groups measured. Teacher expectations were the least for this group as well.	Shows the influence of self-fulfilling prophecies for ethnic groups and teacher expectations
<b>Study# 2</b> Rubie-	If student self perception	The current study aims to measure	256 Students from 12 different	Teacher expectations; high or low	Student self perception; high or low	Of the 256 students,	Students completed self-	Teachers of high expectation	In the academic areas,	Study believes that teacher

Davis 2006	and academic achievement were found to vary with teacher type, this would add further weight to the argument that the directions of the teacher expectancy is stronger from the teacher to the student than that from the students to the teacher.	the self perceptions of students placed in the classrooms of high and low expectation s teachers	classrooms attending 8 elementary schools in Auckland, New Zealand.	group expectations		132 were with high expectati on teachers, 65 were with average expectati ons teachers and 59 were with low expectati on teachers. More Caucasias n and Asian students were found with high expectati on teachers and more Maori and Pacific Islanders were found with average and high expectati	perception scale in March and November of 1 <sup>st</sup> academic year. New Zealand school year runs February to December. Survey questions were read to students by trainee teachers completing final year of preservice teaching qualification.	group had more teaching experience while teacher of low expectation s had less experience; self perceptions changed throughout the year from no differences to one that showed differences in student's perceptions in all three groups.	student self perception appeared to change over the year in relation to teachers' expectations. No differences at the beginning of the year for the three groups, but by the end of the year, the high and average groups had increased while the low expectation group had declined.	perceptions plays a role in what students may feel about their own academic performanc e as the year progressed. Teachers, teacher education programs and families need to work together to ensure that students remain optimistic motivated and successful with in the school environmen t
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Study	Problem	Purpose	Sample/ Participants	Independent Variables	Dependent Variables	Design	Procedures	Analysis	Results	Contribution to your research study
<b>Study# 3</b> Rubi-Davies (2007)	Recent studies have shown that whole class factors to have more significance in portraying teachers' expectations.	Explore whether the classroom exchanges of high and low expectation teachers differed and might be considered a mechanism for teachers' expectations	12 primary school teachers from eight schools who have been identified as having expectations for their student's learning that were either above or below the children's achievement level.	Types of statements teachers with high expectations will make	Teachers with high expectations	Participants were observed twice in the academic year during half-hour reading lessons. Two people observed each lesson; one an observation protocol the other a running record.	12 teachers out of 21 were identified as either having high or low expectations for students' achievement, which were either above or below their actual achievement. This was also found to be at the class level. Students placed with high expectation teachers, made more progress than low expectation teachers	Differences were found in the environment of high and low expectation teachers in both instructional and socio-emotional	High expectation teachers spent more time providing a framework for students' learning, provided their students with more feedback, questioned their students with higher-order questions, and managed their students' behavior more positively.	High expectation teachers used choices, close monitoring of progress, enhanced student motivation, development of community values, focusing and refocusing students' attention, activating prior learning, high levels of instructional talk, providing encouragement and feedback, asking higher level of questions, managing

										students positively, using self directed classroom procedures.
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study #4</b> Harris and Rosenthal (1986)* ****	What individual differences and behaviors mediate the transmission of an expectation and its fulfillment by the students?	To approach teaching behavior from two perspectives: as dependent variables resulting from gender and expectancy effects and as independent variables influencing student achievement and academic self concept	Ten professional (3 men and 7 women) and ten peer teachers (5 boys and 5 girls; grades 4-6). 80 students (42 boys and 38 girls; grades 4-6) some of whom teachers had been told had exceptional abilities.	Cognitive Performance and Academic Self Concept Independent variables – warmth, praising, task oriented, monotonous, academic self concept, positive toward teacher, enjoyment of lesson, poor teaching, off task teaching, active teaching, negative feedback, no interruptions,	10 professional teachers, 10 peer tutors teach a simple lesson while two judges code lesson	Each teacher teaches two boy and two girls. Judges code lesson. Teachers are told one student of each sex should do well in the lesson. Judges are blind to this expectancy.	Lessons are videotaped, ten minutes long and questionnaires are completed at the end of lesson by both teachers and students.	Interrelations of among teacher characteristics, behaviors and expectations examined through correlation analyses and contribution of teacher behaviors and characteristics in determining student academic self concept and cognitive	Teacher warmth Is effective Only if a certain level of task orientations is present.	By itself warmth is not necessarily beneficial and may actually detract from student performance.

Study	Problem	Purpose	Sample/ Participants	Independent Variables	Dependent Variables	Design	Procedures	Analysis	Results	Contribution to your research study
Study # 5 Jussim (1989)	Why do students confirm teacher expectations?	This study addresses the limitation by assessing the extent to which naturally occurring teacher expectations create self-fulfilling prophecies, create perceptual biases, or accurately predict student achievement.	Study was based on a sample of students and teachers in sixth grade math classes in a public school setting in SE Michigan. Included 27 sixth grade math teachers, 580 students, largely, middle and upper class with 90% white.	Past performance, motivation, teachers' perceptions, Teachers' expectations, Future achievement	Final grades and Michigan Educational Assessment Program	Questionnaires assessed each student's talent, effort, and performance in math. Questionnaire also assessed students' beliefs, perceptions, and feelings in a variety of domains. Questionnaire assessed students' self-concept of ability in math,	Path analytic techniques assessed relations among teacher expectations, student achievement and student motivation.	An analysis of performance, motivation, perceptual bias and accuracy of this bias took place.	Results from this study were more consistent with perspectives emphasizing accuracy in social perceptions	This study does not fit well with my understanding of stereotypes and previous studies. This study feels that this is a naturally occurring event and that teachers may have an accurate assessment of students' academic performance.

						their effort in math, the time they spend on math homework, and the value they place on math. Two prior math scores from CAT and MEAP				
Study	Problem	Purpose	Sample/ Participants	Independent Variables	Dependent Variables	Design	Procedures	Analysis	Results	Contribution to your research study
<b>Study #6</b> Chang/Sue (2003)	Examined the extent to which ratings of child behavior were influenced by the interaction between the race of the child and the type of presenting behavior	Race bias in teacher evaluation may be problem specific.	197 teachers; 163 women, 34 men, representing 160 schools in Southern California	Teacher rating of Vignettes accompanied with a photograph of Asian, Caucasian and African American and asking for an assessment of the seriousness of the child's problem using a 9	Serious, parent referrals, specialist referrals, typicality of race/boys, family quality, academic performance/ability, locus of causality, external control, personal control, stability	3 race x 3 problems would result in nine treatment results for each subject. Race bias may manifest itself differently for different types of	Teachers were given 3 treatments that encompassed all levels of both factors, race and vignettes, but not all nine.	An analysis of vignettes	African and Caucasian Americans rated similarly for over and under control behaviors while Asians were overrepresented in over controlled behaviors.	More bias towards Asians, which may lead to underrepresentation in referrals for services

Study	Problem	Purpose	Sample/ Participants	Independent Variables	Dependent Variables	Design	Procedures	Analysis	Results	Contribution to your research study
<b>Study #7</b> Good/Aronson/Inzlicht (2003)	Standardized tests continue to generate gender and race gaps in achievement despite decades of national attention.	Purpose of this study is to decrease stereotyped threats of female and minority and low income adolescents and improve standardized test scores.	138 seventh grade students plus 25 college mentors, in a computer skills class.	Introduction of malleable intelligence, adjusting to middle school, doing both and learning about drug education.	Texas Assessment of Academic Skills - TAAS	Students learned computer skills, received an educational message in incremental, attribution, combination or antidrug conditions. At the end of the year, students took statewide standardized test in math and reading.	College students complete mentor training course; convey the message of malleable intellect, middle school transition, and drug awareness; students given computer skills to communicate with college students, emailing and web design; college students provide advice, taught the message, met and emailed students, help design websites,	Outlier were identified for math and reading tests five from math and six from reading. Both scores improved more than control group.	Both messages increased student's standardized test scores.	Supports the theory that teacher expectations plays a role in student achievement, and that achievement can be increased by breaking stereotypes.

Study	Problem	Purpose	Sample/ Participants	Independent Variables	Dependent Variables	Design	Procedures	Analysis	Results	Contribution to your research study
<b>Study # 8</b> Fryer/L evitt May 2004	Why is there a substantial test score gap between white and black students even after controlling for a wide range of observable characteristics?	Using Early Childhood Longitudinal Study real gains by black children in recent cohorts appear to play an important role in explaining the differences between findings and earlier research.	20,000 children entering kindergarten in 1998. 1000 schools across America with an average of 20 students per school	Time of testing, subjective teacher assessments, race, age at kindergarten in the fall, SES, number of books in the home, mother's age at birth, child's weight at birth, WIC participation, number of observations	Math and reading standardized test scores	Placement of data in all variables	Explaining the achievement gap by lower quality schools, parental and environmental contributions, suffer worse summer setbacks, poor use of standardized test scores, discrimination/expectations, different set of skills being measured on fall test scores and gap is greater on skills measured later.	No evidence for lower quality schools is weak, little support for summer setback, teachers judge blacks performance only slightly behind whites but scores increase at end of first grade, black students with at least one black teacher are worse with math and slightly better with reading and worse across the board by the end of first grade	Poor teaching plays a large role in student performance	Does not support the theory of low expectations, but perhaps poor teaching qualities may play a bigger role.

Study	Problem	Purpose	Sample/ Participants	Independent Variables	Dependent Variables	Design	Procedures	Analysis	Results	Contribution to your research study
<b>Study # 9</b> Steele/ Aronson (1995)	Whenever African American Students perform an explicitly scholastic or intellectual task, they face the threat of confirming or being judged by a negative societal stereotype about their group's intellectual ability and competence.	To see if Black participants would underperform relative to Whites in the diagnostic condition where there was stereotype threat, but not in the two non-diagnostic conditions- the non-diagnostic-only and the non-diagnostic-plus-challenge condition where this threat is reduced	114 male and female Stanford undergraduates providing verbal SAT scores.	Diagnostic condition; the non-diagnostic only condition; the non-diagnostic-challenge condition	Test performance	114 participants randomly assigned to the three experimental conditions	Students provided verbal SAT scores; work on exam similar to SAT; Diagnostic was concerned with personal factors involved with problems requiring reading and verbal reasoning abilities/ Non-diagnostic-only no reference to verbal ability. Better understand the psychological factors involved in solving verbal problems. Asked to give a genuine effort/ Non diagnostic-challenge verbal ability	Studies 3, and 4 show that stereotype threats establish by quite subtle instructional differences can impair the intellectual test performance of Black students and that lifting it can dramatically improve performance.	Priming racial identity depressed Black participants' performance on a difficult verbal test even when the test was not presented as diagnostic of intellectual ability.	These results may help to explain the achievement gap between African and Caucasian students. It does not address the level of expectations for African American

Study	Problem	Purpose	Sample/ Participants	Independent Variables	Dependent Variables	Design	Procedures	Analysis	Results	Contribution to your research study
<b>Study# 10</b> Clifton Casteel (2000)	African American student's perception of how Caucasian teachers may view them.	In this study, students' feelings about their teachers and their preferences among the teachers who instruct them were evaluated.	Participants included 160 African American seventh grade students from a low socio-economic suburb in southeastern Louisiana.	Survey questions of how students felt about their teacher	African American students	Survey type	Students' feelings about their teachers and their preferences among the teachers who instructed them were surveyed and evaluated in writing. Students completed an anonymous survey in which students identified their gender, were asked to skip ambiguous questions, to respond honestly, and to circle the number of African American teachers they had.	The findings indicated participants did not believe their race was a significant factor in the way they were treated in the classroom by their Caucasian teachers.	These findings are contrary to Casteel's study (1998), which showed African American students were not treated fairly, and teachers of different races have trouble accepting African American students.	Results showed that most students viewed their teachers in a very positive light.

Study	Problem	Purpose	Sample/ Participants	Independent Variables	Dependent Variables	Design	Procedures	Analysis	Results	Contribution to your research study
<b>Study# 11</b> Clifton Casteel (1998)	Simply put, "Are African American students treated differently from Caucasian American students by Caucasian American teachers, on the basis of their race?"	The treatment of African American students and Caucasian American students in middle schools by Caucasian American teachers during 32 hr of instruction in integrated classrooms was investigated.	Caucasian American female teachers, during 32 hours of instruction in integrated classrooms. Sixteen Caucasian teachers were chosen, two from each school.	Racial diversity, gender, gender of student's teacher, interaction and method of response	Measurement of teacher response to students in the classroom	Survey Design	Two observations over a two month period of time conducted within three months of the first observation	African American males as a group were not treated as favorably as Caucasian students	Teachers interacted more positively with Caucasian American students according to nearly all 16 variables of a modified version of the Brophy-Good Dyadic Coding System (Brophy-Good, 1970).	Contributes to expectation awareness, Casteel (1998) concluded teacher interaction and treatment of students in integrated classrooms is not equal.
Study	Problem	Purpose	Sample/ Participants	Independent Variables	Dependent Variables	Design	Procedures	Analysis	Results	Contribution to your research study
<b>Study# 12</b> Crozier, G. (2005)	Parents of African/Caribbean and mixed race students feel that their	The purpose of this study is to analyze the experiences	Crozier (2005) interviewed 22 families in two cities in the south west of England to	Survey of Parental observation of student experience in school	Parental responses	Survey	Survey of parents	Parents felt teachers stereotyped, prejudged, focused more on	. Parents related stories of students beginning school with	Anecdotal of parents regarding children's school experience.

	children are denied an adequate education.	of secondary-aged and primary-aged children of African Caribbean and mixed "race" heritage in two cities in the south of England.	determine how parents perceived their children's educational experiences. The parents were of African Caribbean and mixed race heritage origin and among the lowest academic achieving minority groups in the United Kingdom.					behavior than academics, had low expectations, accused parents of having too high expectations, and forced more suspension or expulsions on their children, than other groups of students.	positive attitudes and ending in bitterness. One parent related the feeling of "breaking the spirit" of her children in attending school.	
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study# 13</b> Aronson (2004)	What else' is causing the poor performance of students who should otherwise excel in a college or university environment.	The purpose of this study is to review how stereotyping behaviors have a negative impact on African Americans, Latinos and girls in math oriented domains.	Studies show similar effects for women on math tests, Latinos on verbal tests, and elderly individuals (who face the stereotype about poor memory) on tests of short-term memory. white male engineering students (with	Grouping of students depending on the story told to each	Performance of students	Review of literature on Stereotype Threats	Studies show similar effects for women on math tests, Latinos on verbal tests, and elderly individuals (who face the stereotype about poor memory) on tests of short-term memory. white male engineering students (with	Since the publication of initial report a decade ago, nearly 100 studies on stereotype threat have been conducted, both by us and by researchers around the world, showing	Educators can minimize stereotype threat. When this happens student scores, motivation, and enjoyment of the education process soar. For example,	A significant way at looking at other causes for low performance.

			<p>astronomical SAT math scores) performed significantly worse on a difficult math test when we told them that their performance would help us understand Asians' mathematical superiority (<i>Aronson et al., 1999</i>).</p>				<p>astronomical SAT math scores) performed significantly worse on a difficult math test when we told them that their performance would help us understand Asians' mathematical superiority (<i>Aronson et al., 1999</i>).</p>	<p>that stereotype threat is a significant factor in the achievement gap (Massey et al., 2003). These studies shed considerable light on how stereotypes suppress the performance, motivation, and learning of students who have to contend with them, and they suggest what educators can do to help (<i>Aronson &amp; Steele, 2005</i>).</p>	<p>cooperative classroom structures in which students work interdependently typically produce immediate and dramatic gains in minority students' grades, test scores, and engagement because such environments reduce competition, distrust, and stereotyping among students (<i>Aronson &amp; Patnoe, 1997</i>).</p>	
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Study#	Problem	Purpose	Sample/ Participants	Independent Variables	Dependent Variables	Design	Procedures	Analysis	Results	Contribution to your research study
Study# 14 Brown	What characterizes the climate in a school that effectively teaches economically disadvantaged minority students? In this school, what are teachers' beliefs about effective instructional methods? For exemplary teacher in an effective school, how is school climate perceived and how do teachers communicate school climate to students? What expectations do these teachers have for	The purpose of this case study was to examine the roles of school climate, teacher expectations and instructional practices in an elementary school in South Carolina.	a case study of instructional practices of one elementary school in South Carolina. The school studied had a population of 7500 students in which 71% were African-American, 28% were Caucasian, and 1% were Hispanic. Most students were of low socioeconomic status and 86% received free school meals. Approximately 34% of the students were in special education.	The number of strategies presented for improving learning.	Students within the school	Review of instructional practices	This was a result of a five year school improvement plan focused on high student expectations.	They also promoted the use of cooperative learning groups; Nearly all classrooms incorporated multicultural curriculum perspectives. Teachers were sensitive to the local culture	The results of this case study indicated a student's educational needs are best met by creating a supportive educational environment, using a flexible instructional approach that uses peer support, use encouragement, building relationships with families and to better prepare teachers in working with diverse groups of children.	The school had ten years of poor student performance and then it received national awards for school achievement.

	students and how do these expectations influence their choice of instructional methods?									
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study# 15</b> Tenenbaum	Are teacher expectations different for racial minority than for European American students?	To examine whether teachers' expectations, referrals, positive and neutral speech, and negative speech	four separate meta-analyses were conducted. These meta-analyses included (a) differences in teachers' expectations	To examine whether teachers' expectations, referrals, positive and neutral speech, and negative speech	Teacher	We examined the methodology used in experimental studies further	four separate meta-analyses were conducted	For the unit of analysis, we considered group samples and publications separately. First, group	Four quantitative meta-analyses were conducted examining whether teachers' expectation	more positive expectations, made more positive referrals and fewer negative referrals,

		differed toward ethnic minority students as compared with European American students.	for ethnic minority versus European American children, (b) differences in teachers' special education, disciplinary, or gifted referral rates between ethnic minority and European American children, (c) teachers' positive and neutral speech, and (d) teachers' negative speech.	differed toward ethnic minority students as compared with European American students		and divided them on the basis of whether participants read written vignettes, made judgments based on photographs, watched videotapes or listened to audiotapes, simulated teaching, or used a combination of various methods.		samples as a unit of analysis refers to when groups used different participants or when participants rated students of different ethnic backgrounds	s, referrals, positive behaviors, and negative behaviors differed for ethnic minority compared with European American children. Three of the four meta-analyses found small but significant effects suggesting that teachers held	and provided more positive and neutral speech for European American children than for African American and Latino/a children. Furthermore, teachers held higher expectations for Asian American students compared with all other groups of children.
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study # 17</b> Singham (2003) ■■■■■	Why hasn't the achievement gap been solved?	The purpose of this study is to place the focus of where students are	Article	Article	Article	Evaluation	None	Topic that is fraught with myths; Criticism of the diagnoses;	Results that showed that the use of reform curricula significantly narrowed	Gap that can be reduced by good teaching; Impact of teacher

		at and where they should be.							the gap between whites and underrepresented minorities;	expectations; Suggestions for a long-term professional development program.
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study #18</b> Singham (1998) *****	The achievement gap between black and white students	To examine possible solutions to the achievement gap.	Example of schools in Shaker Heights, Ohio;	Article	Article	Report	Use of various models to explain differences	Problem needing to be addressed on educational, social and psychological fronts	How data for whites and blacks are interpreted differently; How the black community views the success of individuals; More.	How data for whites and blacks are interpreted differently; How the black community views the success of individuals; More.
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study #19</b> <b>Singham</b> <b>(1995)</b>	A look at race and intelligence	Comparison of individual and group differences	N/A	N/A	N/A	Report	Review of "The Bell Curve"	The authors of The Bell Curve are saying that the people and groups who dominate	Understanding the roles of race and intelligence, continues to be a difficult process	It is essential that we understand clearly the rules (and limits) of scientific

								our society because of their intrinsic ability and merit, that this is the way things were meant to be, and that they and those like them should be benefited .		logic and inference and how to apply them.
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study #20 Smeakar, C., Guthrie, J., &amp; Owens, D. E.(2001 )</b>	Description of DoD school system	A review of DoD school system and what may be replicated for US public schools	DoD Schools	None	None	Report	Review/Interviews	Review of entire system from Principals to students	Military commitment to education is key	Understanding the importance of military support in educational achievement

Study	Problem	Purpose	Sample/ Participants	Independent Variables	Dependent Variables	Design	Procedures	Analysis	Results	Contribution to your research study
<b>Study #21 Wiggan, Greg (2008)</b>	Only a few studies have explored school engagement and success among these students, and even fewer have examined the experiences of high achieving black students.	This study illustrates the school context and school processes that high achieving African American students identify as contributing to their academic success.	Seven African American Students	1) teacher practices, engaging pedagogy versus disengaging pedagogy; 2) participation in extracurricular activities and; 3) the state scholarship as performance incentive.	Students`	Interviews	Interviews and coded		According to the students, teacher practices were the most instrumental school effect benefiting their outcomes.	Recognizing the processes that promote high achievement among African American students can help to improve our understanding of student performance, while promoting success among these students.
<b>Study# 22 Viadero, D. (2006).</b>	Review of Coleman Report	Where do we stand after 40 years	737 page report	Looked at all aspects of school	All aspects of school	Report	Reviewed original document	researchers continue to grapple with many of the same questions about how family background contributes	researchers continue to grapple with many of the same questions about how family background contributes	A great summary of the Coleman Report

								to disparities in children's school performance.	to disparities in children's school performance.	
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study # 23 Smith, Rosa (2005)</b>	Focuses on the status of education among African American male students.		African American Male students	None	None	Report	None	Strategies for ensuring equity of resources and achievement for African American students; analysis	Role of superintendents in the school's success in improving the academic performance of African American male students.	More Blacks obtain GED's in prison than receive college degrees
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study #24 Walker, Marlon</b>	Lower status names	Observe educational treatment of students	African American students	Names	African American students	Review of Birth Certificates	From 2002-2004 Figlio looked at about 55,000 children from	statistical techniques, letter/sound combinations and	children with "exotic" names such as LaQuisha	Teachers may treat students differently based on

(2005)							more than 24,000 families, studying their transcripts and test scores to see any differences in the way the siblings were treated.	regression analysis techniques to come up with the many names he studied. His analysis shows that many of the names begin and end with specific prefixes and suffixes such as "lo," "qua" and "isha," and contain apostrophes and pairs of low-frequency consonants.	and D'Juan are less likely to be placed in advanced or gifted classes than their counterparts with more "mainstream" names such as Sarah and Michael.	what may be perceived as lower status names.
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study #25 Good, Aronson and Inzlicht (2003)</b>	Poor performance of minorities on standardized testing	helping female, minority, and low-income adolescents overcome the anxiety-inducing	Seventh grade students	7 <sup>th</sup> grade female student	College Mentors	Field Experiment	College mentors encouraged student to see intelligence as malleable or to attribute academic difficulties in	adolescents—in the experimental conditions earned significantly higher reading	Results showed that females in both experimental conditions earned significantl	A program that demonstrated that achievement scores can be improved if pinpointed

		effects of stereotype threat and, consequently, improve their standardized test scores.					the seventh grade to the novelty of the educational setting.	standardized test scores than students in the control condition.	y higher math standardized test scores than females in the control condition.	instruction is provided
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study #26 Owens, J and Massey , Douglas (2011)</b>	Underperforming minority students at selective colleges and universities	This study overcomes previous methodological shortcomings by developing a latent construct model of stereotype threat.	African American, White and Hispanic college students	Survey questions	Academic Performance	A latent construct model of stereotype threat	OLS Regression Modeling	This study overcomes previous methodological shortcomings by developing a latent construct model of stereotype threat.	Findings additionally support the view that social stigma can indeed have strong negative effects on the academic performance of pejoratively stereotyped racial-minority group members, not only in	Stereotype threat may be a hindrance to academic performance to minority groups

									laboratory settings, but also in the real world.	
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study # 27</b> <b>Montalvo, G; Mansfield, E; Miller, R (2007)</b>	The impact of liking or disliking a teacher on student learning and motivation	Comparison of motivation data related to liked and disliked teachers from 125 students	125 students	Assessment of goals, perceived ability effort and persistence	Two separate motivation surveys	Survey	Data collection'; consent forms; surveys	Confirmatory factor analysis	The findings suggest that when students like a teacher they experience motivational and achievement benefits	The teacher matters in student achievement
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study # 28</b> <b>Good, C; Aronson, Joshua; Harder, Jayne (2007)</b>	Despite considerable laboratory evidence for the role of "stereotype threat" in girls' and women's math test performance, the relevance of such findings for	The goal of the present study was to test whether the negative effects of stereotype threat extend beyond the laboratory and beyond women's	157 students	Threat manipulation of Calculus test	Stereotyped threat and Non Stereotyped threat groups	Four groups of students Threat Male and Female; Non-threat male and female	Comparison of results	Statistical Analysis	Test performance of women in a stereotype-nullifying presentation of the test in an experimental group was raised significantly to surpass	The pattern of results suggests that even among the most highly qualified and persistent women in college mathematics, stereotype

	the “real world” gender test-score gap remains unclear	mathematics performance in general to women's underperformance in the most difficult college mathematics courses — those that produce future mathematicians, engineers, and scientists,							that of the men in the course. In a control group, in which test-takers were given the test under normal test instructions, women and men performed equally.	threat suppresses test performance.
<b>Study</b>	<b>Problem</b>	<b>Purpose</b>	<b>Sample/ Participants</b>	<b>Independent Variables</b>	<b>Dependent Variables</b>	<b>Design</b>	<b>Procedures</b>	<b>Analysis</b>	<b>Results</b>	<b>Contribution to your research study</b>
<b>Study #29 Cohen, Garcia, Apfel, Master (2006)</b>	Reducing the racial achievement gap	to improve minority student performance and increase our understanding of how psychological threat mediates	119 African American and 124 European seventh grade students	Writing of paragraphs of affirmation	Four groups of students; AA – Control, EA-Control, AA-Affirmation, EA-Affirmation	Experimental	Writing of brief paragraphs indicating why their selected values were important to them	Multiple regression	Findings demonstrate that alleviating psychological threat can improve intellectual achievement in a real-world	There is an intervention that may assist in Stereotype Threats

		performanc e in chronically evaluative real-world environmen ts.							environ- ment.	
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