AN ANALYSIS OF THE EFFICACY OF THE ADVANCEMENT VIA INDIVIDUAL DETERMINATION (AVID) INTERVENTION PROGRAM

BY

DAVID A. BLEAKLEY

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Approved by

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W. Steven Barnett, Ph.D., Chair

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Melinda Mangin, Ph.D.

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Jeff Gorman, Ed.D.

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ABSTRACT OF THE DISSERTATION

An Analysis of the Efficacy of the Advancement Via Individual Determination (AVID) Intervention Program

By DAVID A. BLEAKLEY

Dissertation Chairperson:
W. Steven Barnett, Ph.D.

PROBLEM: This study investigated the effectiveness of the Advancement Via Individual Determination (AVID) at Fairview High School. AVID's mission is to close the achievement gap by preparing students for college readiness. The achievement gap is a phenomenon observed generally across American schools, and specifically at Fairview High School. The study answered the research question: What effect does participation in AVID at Fairview High School have on selected student performance indicators after at least one year of enrollment in the AVID elective class?

METHOD: The study used a quasi-experimental design with a sample of 67 students who experienced AVID for at least one academic year and 69 students who did not. When comparing the two groups analyses controlled for student grade point averages prior to entry into the AVID program, prior standardized test performance, ethnicity, gender, and free or reduced lunch status. Regression analysis was used to estimate AVID's impact on indicators of college readiness including the strength of student schedules, student grade point average (GPA), standardized test performance in Math and Language Arts, PSAT participation, PSAT scores, and attendance.

FINDINGS: AVID's estimated impact was statistically significant on 4 of 13 outcome measures. There was a statistically significant direct relationship between participation in AVID and the strength of a student's schedule, student performance on the grade 11

Language Arts section of the HSPA, and participation in the PSAT. There was a statistically significant inverse relationship between participation in AVID and GPA. SIGNIFICANCE: The significance of the study is that it provides information to the Fairview High School site team on the extent to which the investment in the AVID program is producing its intended effects. The findings imply that certain aspects of AVID's implementation are contributing to positive measured effects. However, the findings also demonstrate one negative effect and multiple outcomes without any measurable effect. The site team at Fairview High School will be able to use the results of this study to assess AVID's impact as well as to determine areas of future study regarding AVID's implementation and effects at Fairview High School.

I dedicate this to my family who share this accomplishment with me.

Kelsey, Kendall, and Cameron

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I thank my family for supporting me over the years. In particular I thank my wonderful wife Kelsey for the sacrifices she made all those days and nights that I spent in class, at the library, or at home isolated to complete coursework and make progress on my dissertation.

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I thank Dr. Jeffrey Gorman for his extensive knowledge of the AVID program and his guidance regarding the framing of the problem. Furthermore, Dr. Gorman was essential in the development of the use plan associated with this study in order to ensure that the study furthers my development as a practitioner.

I thank the Principal of Fairview High School, Mrs. Linda Jewell, for her support throughout the dissertation process. Mrs. Jewell not only provided access to all necessary school records, but she also provided the encouragement and inspiration for me to excel that has been the hallmark of her career.

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CHAPTER I

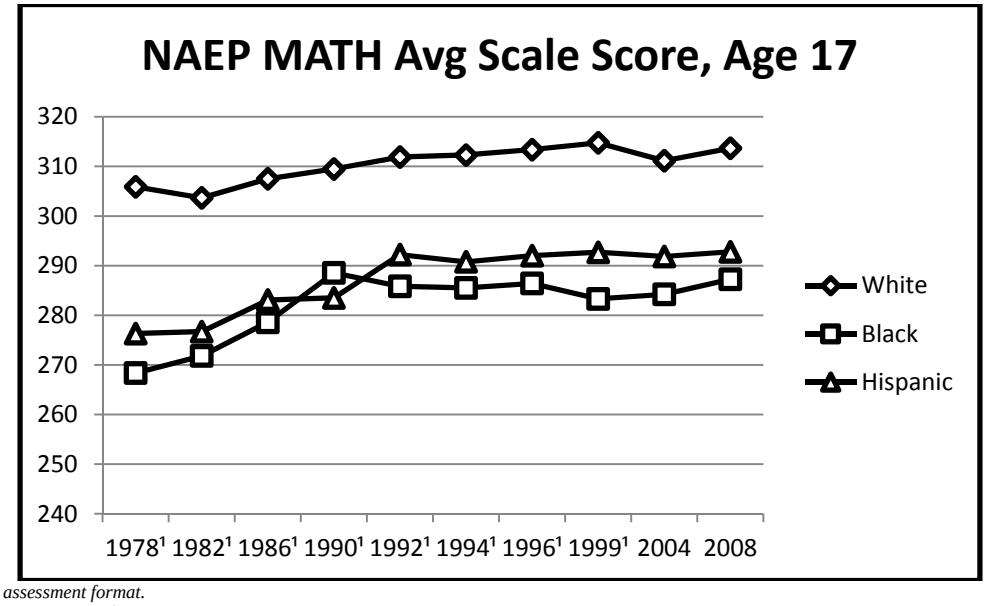
Introduction

A quick search of the term “achievement gap” in Google (www.google.com) will return about six million results in 0.15 seconds. The ubiquity of the term’s presence on the web is a consequence of the interest in the fact that an achievement gap exists in American schools between minority and low income students and White and middle/upper income students (NCES,2011; Shettle, Roey, Mordica, Perkins, Nord, & Teodoriv, 2007; College Board, 2011; Saenz, Hurtado, Barrera, Wolf, & Yeung, 2007). The term ‘achievement gap’ is used to refer to the disparities in standardized test scores between Black and White, Hispanic and White, and recent immigrants and White students (Ladson-Billings, 2006). Much of the historic literature on the achievement gap focused on the differences between White and Black students which has left other minority populations such as Hispanics under researched (Carpenter, Ramirez, & Severn, 2006). A problem in the current literature on the achievement gap is this singular definition which essentially treats all minority populations as equivalents and assumes, for example, that due to similar processes and circumstances differences between White students and Black students can also explain differences between White students and other minority population such as Hispanics (Carpenter et. al., 2006).

The achievement gap between these groups can be seen using a variety of different metrics. For example, in 2009, and in all previous assessment years since 1992, the average National Assessment for Educational Progress (NAEP) reading and math scores of White students in grades 4, 8, and 12 were higher than the scores of their Black and Hispanic peers (NCES, 2011). Figures 1 and 2 demonstrate that since 1978 NAEP

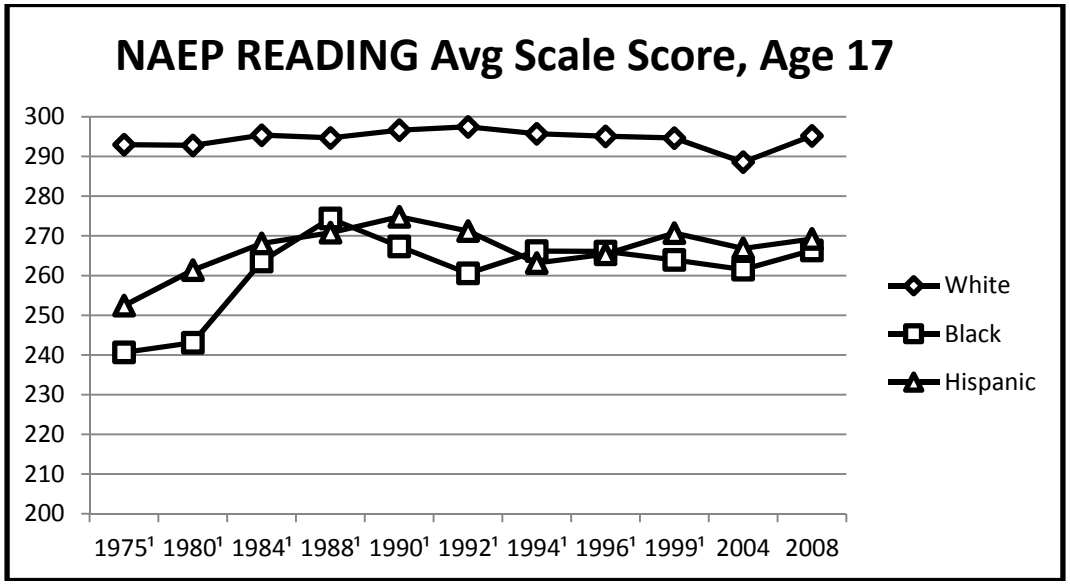
scores in Math and English reveal a persistent and consistent gap between White and Black students, and White and Hispanic students (USDOE, 2013). Though the data reveals gains by Black and Hispanic students in both math and reading since 1978, the gap remains large and problematic (USDOE, 2013). Furthermore, some have even argued that the achievement gap between White students and minority students is actually underreported in the literature (Verdugo, 2011). The explanation is that when grade 12 NAEP scores are compared with grade 8 NAEP scores the large number of Black and Hispanic students that have dropped out of school between grades 8 and 12 allow for an upward statistical bias in the grade 12 scores that over represents the achievement of those groups that have experienced the largest dropout rates (Verdugo, 2011). This suggests that the long term upward slope seen in Figures 1 and 2 for Black and Hispanic students would be moderated and less pronounced had not so many Black and Hispanic students dropped out of high school prior to the administration of the grade 12 (age 17) NAEP assessments.

FIGURE 1



¹ Original assessment format.
NOTE: Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin. The NAEP Long-Term Trend Mathematics scale ranges from 0 to 500. Some apparent differences between estimates may not be statistically significant.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1978, 1982, 1986, 1990, 1992, 1994, 1996, 1999, 2004 and 2008 Long-Term Trend Mathematics Assessments.

FIGURE 2



¹ Original assessment format.
NOTE: Black includes African American, and Hispanic includes Latino. Race categories exclude Hispanic origin. The NAEP Long-Term Trend Reading scale ranges from 0 to 500. Some apparent differences between estimates may not be statistically significant.
SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1971, 1975, 1980, 1984, 1988, 1990, 1992, 1994, 1996, 1999, 2004 and 2008 Long-Term Trend Reading Assessments.

Despite the fact that a persistent and meaningful gap exists between White Students and their Hispanic and Black classmates, there is some evidence of a slow closing of the gap. Figures 3 and 4 show that the gap between White students and Hispanic students in particular has shrunk in recent decades. Figure 4 demonstrates that the closing of the gap is most pronounced in grade 12 student math achievement. The Black-White achievement gap in math showed meaningful closing through 1990, however after that the gap increased again and has since remained essentially flat. In reading, Figure 3 shows that the initial relative gains made by both Black and Hispanic students in the 1970s and 1980s came to a halt and remained essentially flat during the 1990s and the first decade of the 21st century.

FIGURE 3

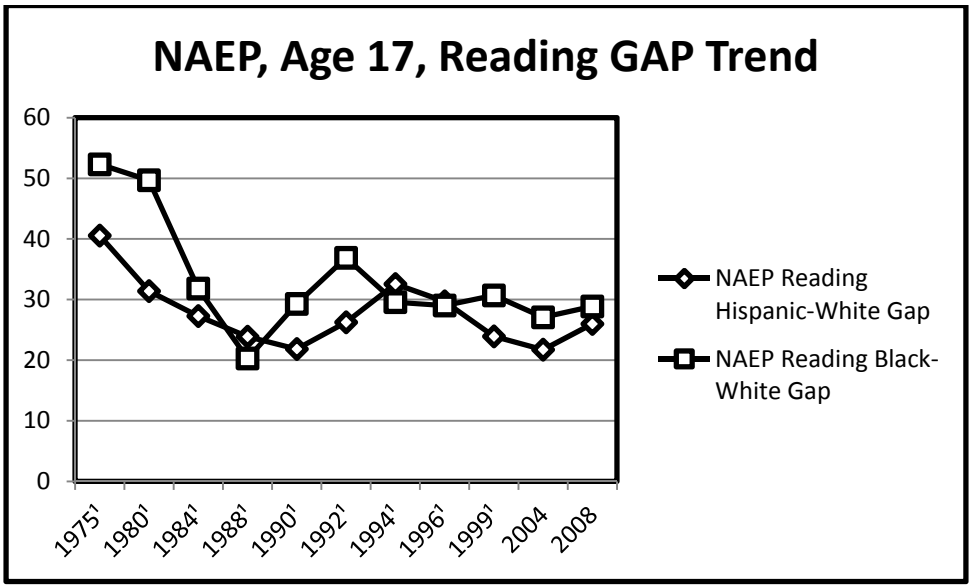
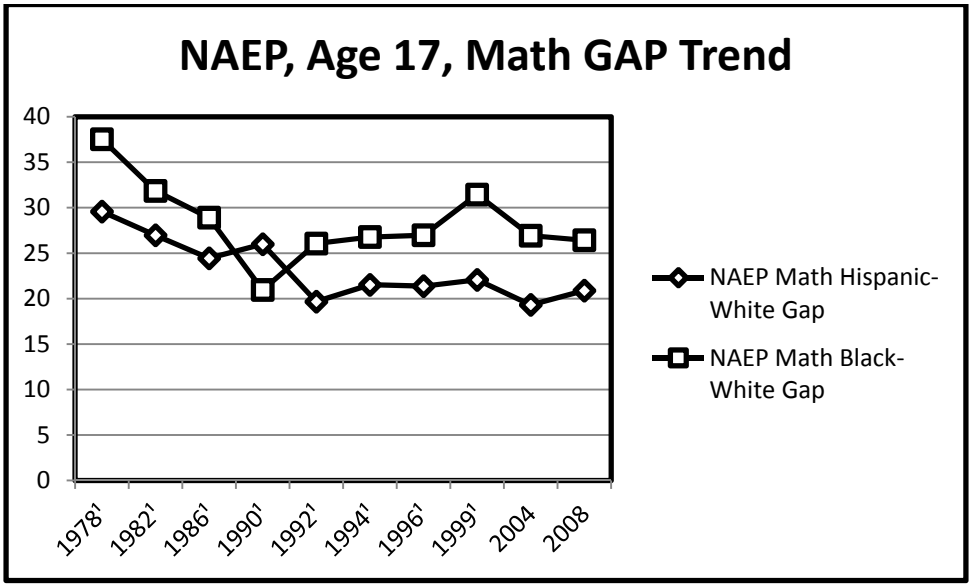


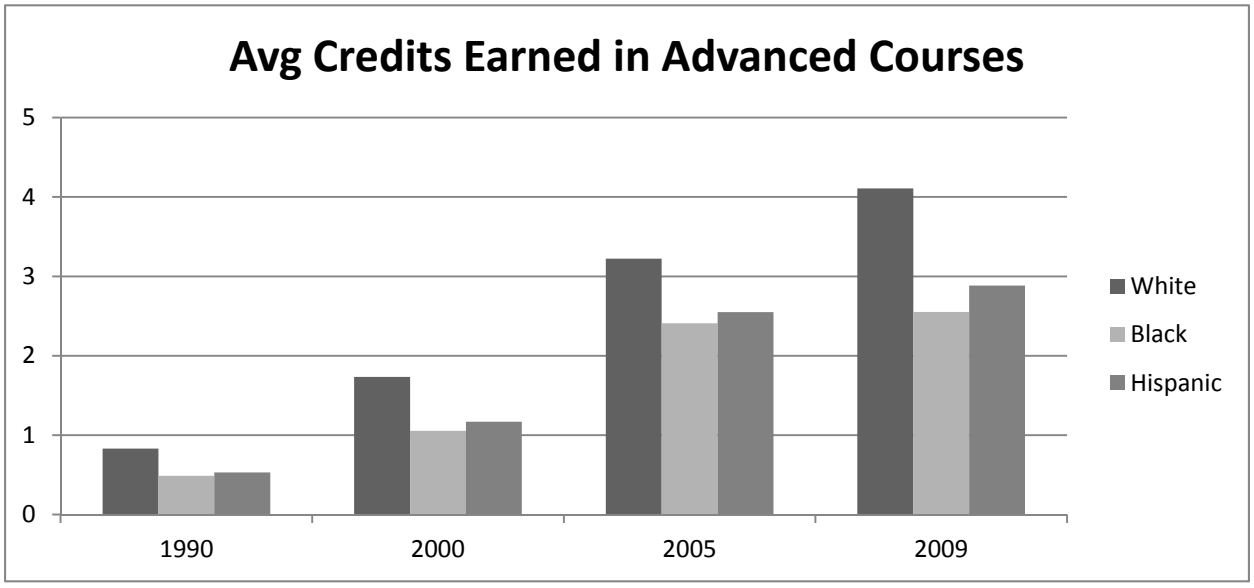
FIGURE 4



In addition to the gaps in the NAEP data, the gap in Advanced Placement (AP) test scores between minorities and Whites is also large. In New Jersey, for example, in 2011 the mean AP score for White students was 3.38, for Hispanics 2.83, and for Black students 2.44 (College Board, 2011). A gap also exists between the number of AP test takers in New Jersey from different ethnic groups with Whites accounting for 57.8%, Hispanics accounting for 6.11%, and Blacks accounting for 4.37% (College Board, 2011). When it is considered that Hispanics make up 21.7% of the New Jersey student population and Blacks constitute 16.3% of the student population these numbers are staggering (New Jersey Department of Education [NJDOE], 2010-2011). This gap implies that ethnic minority students are not enrolling in rigorous courses relative to White students. National data supports this conclusion. Figure 5 shows that between 1990 and 2009 a pattern similar to that seen in the NAEP data is demonstrated. While clearly Black and Hispanic students have steadily increased the average number of credits earned in advanced courses over this time period, White students have also increased

their average credits earned (USDOE, 2013). Thus, though in an absolute sense Black and Hispanic student achievement in advanced coursework is improving, in a relative sense it is essentially remaining constant and therefore the gap persists.

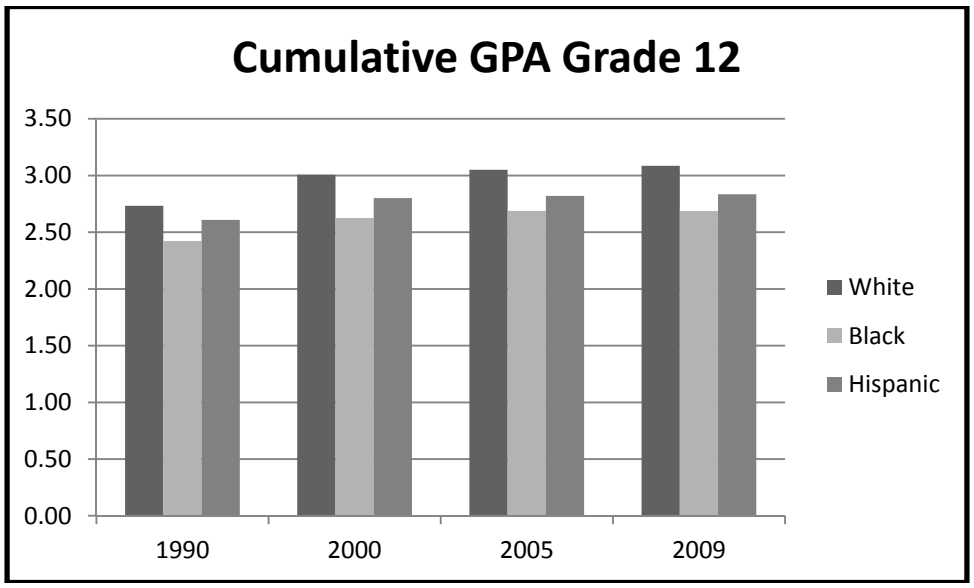
FIGURE 5



NOTE: Black includes African American, Hispanic includes Latino. The credits earned - advanced courses ranges from 0 to 60. Detail may not sum to totals because of rounding. Some apparent differences between estimates may not be statistically significant. SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 2000, 2005 and 2009 High School Transcript Study (HSTS).

Data on student Grade-Point-Averages (GPAs) demonstrates the achievement gap as well. The data reveals that the average GPA of high school graduates for White students was 3.05, for Black students was 2.69, and for Hispanic students was 2.82 in the years 1990-2005 (Shettle et al., 2007). Nearly the precise pattern observed in the NAEP and advanced course data is demonstrated in the data on GPAs for grade 12 students. Figure 6 shows that while GPAs rose between 1990 and 2009 for all three demographic groups, the relative positions of each demographic group remains almost exactly the same and thus the gap is shown to persist through this lens as well.

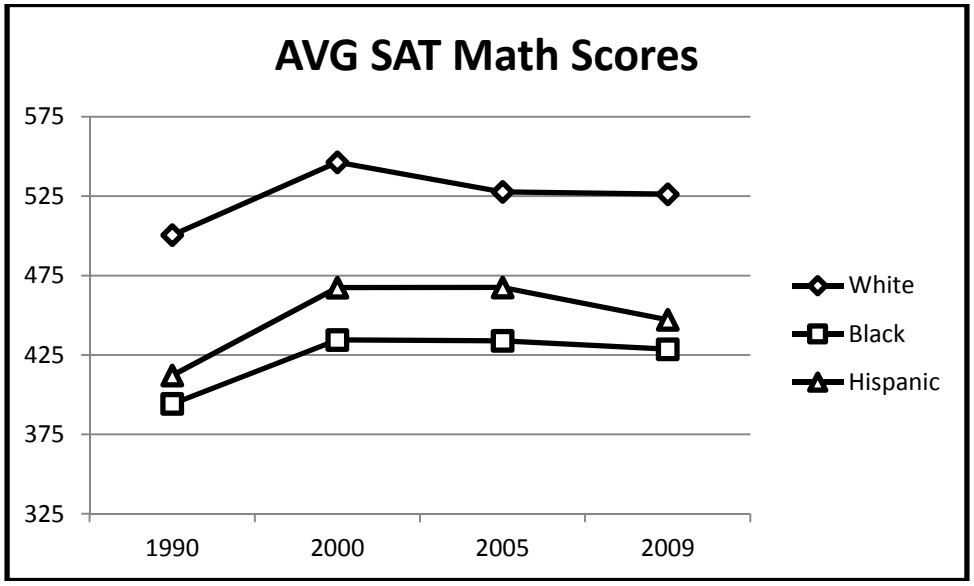
FIGURE 6



NOTE: Black includes African American, Hispanic includes Latino. The GPA - overall ranges from 0 to 4. Some apparent differences between estimates may not be statistically significant.SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 2000, 2005 and 2009 High School Transcript Study (HSTS).

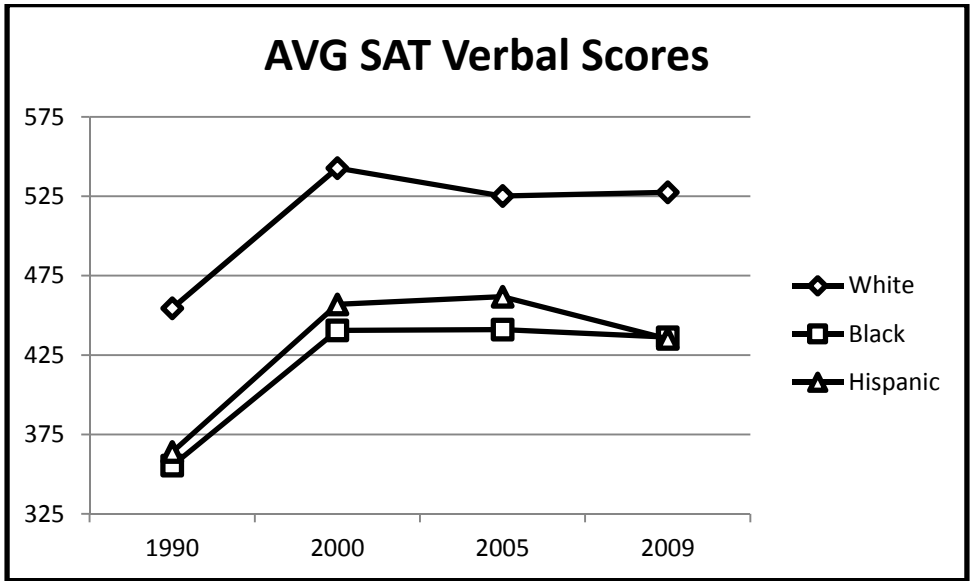
Although scoring well on the Scholastic Aptitude Test (SAT) is only one of many factors commonly considered for admission to four year colleges and universities, it is commonplace for institutions to look for scores at or above certain levels relative to peer applicants when making admission decisions. The SAT data pictured in Figures 7 and 8 once again tell the story described above. In absolute terms all students were scoring higher in 2009 than they were in 1990, however the gap between White students and Black students, and White students and Hispanic students remains relatively consistent and irrefutably meaningful given the role that SAT scores have historically played in the college admission process.

FIGURE 7



NOTE: Black includes African American, Hispanic includes Latino. The SAT Mathematics score ranges from 200 to 800. Some apparent differences between estimates may not be statistically significant.SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 2000, 2005 and 2009 High School Transcript Study (HSTS).

FIGURE 8



NOTE: Black includes African American, Hispanic includes Latino. The SAT Verbal score ranges from 200 to 800. Some apparent differences between estimates may not be statistically significant. SOURCE: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, National Assessment of Educational Progress (NAEP), 1990, 2000, 2005 and 2009 High School Transcript Study (HSTS).

Though dropout rates for Whites, Blacks, and Hispanics have dropped between 1980 and 2009, what has been consistent is that Black students have been dropping out at rates higher than White students, and that Hispanic students have been dropping out at rates higher than both Black and White students (NCES, 2011). For those students who do ultimately graduate from high school, the college enrollment rates for Hispanic and Black students are low relative to the proportion of Hispanics and Blacks in the general population (NCES, 2011). Though college enrollment has increased by a factor of greater than 10 since the 1940s at both two-year and four-year colleges and among all ethnic and income groups, underrepresentation continues for low-income, Hispanic, and African-American students (Swail & Perna, in Teirney & Serra, 2002). Of the students who enter four year post-secondary institutions, 60% of White students graduate with a bachelor's degree within six years while only 49% of Hispanic and 40% of Black students do the same (NCES, 2011).

I leave a more thorough analysis of the subtleties of the relative gains and losses by Black and Hispanic students when compared to White students on a number of achievement measures over the last several decades to others. For the purposes of this study, the essential point is that regardless of relative gains for any one group on any one measure, a significant gap remains on every measure available.

Implications of the Achievement Gap

Reducing the achievement gap would be valuable for several reasons. First, equity with respect to educational achievement is in itself a value that ought to be pursued. This position is expressed in court decisions at both the national and state level

(see *Brown vs. the Board of Education* [1954] and *Abbott v. Burke* [1985] as two examples).

Another compelling reason to reduce the achievement gap is that reducing the achievement gap will decrease economic inequality. The same groups highlighted above that are underperforming in school are also underperforming in the economy, with higher unemployment rates and lower wages. Figure 9 shows that over the 10 year period between 2003 and 2012, unemployment decreased gradually, then increased rapidly, and then decreased gradually again (USDOL, 2013). Over the entire period Blacks have consistently experienced the highest unemployment rates, followed by Hispanics, with Whites having the lowest unemployment rates among the three demographic groups (USDOL, 2013). Figure 10 shows a clear inverse relationship between the level of educational attainment and the unemployment rate over the same period (USDOE, 2013).

FIGURE 9

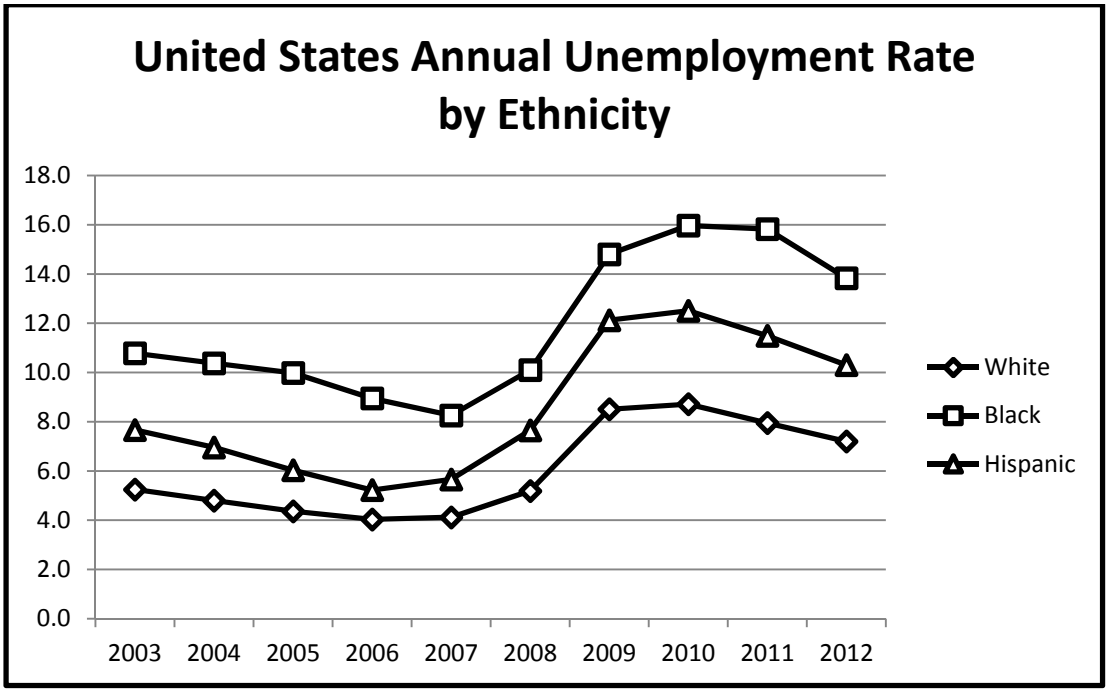
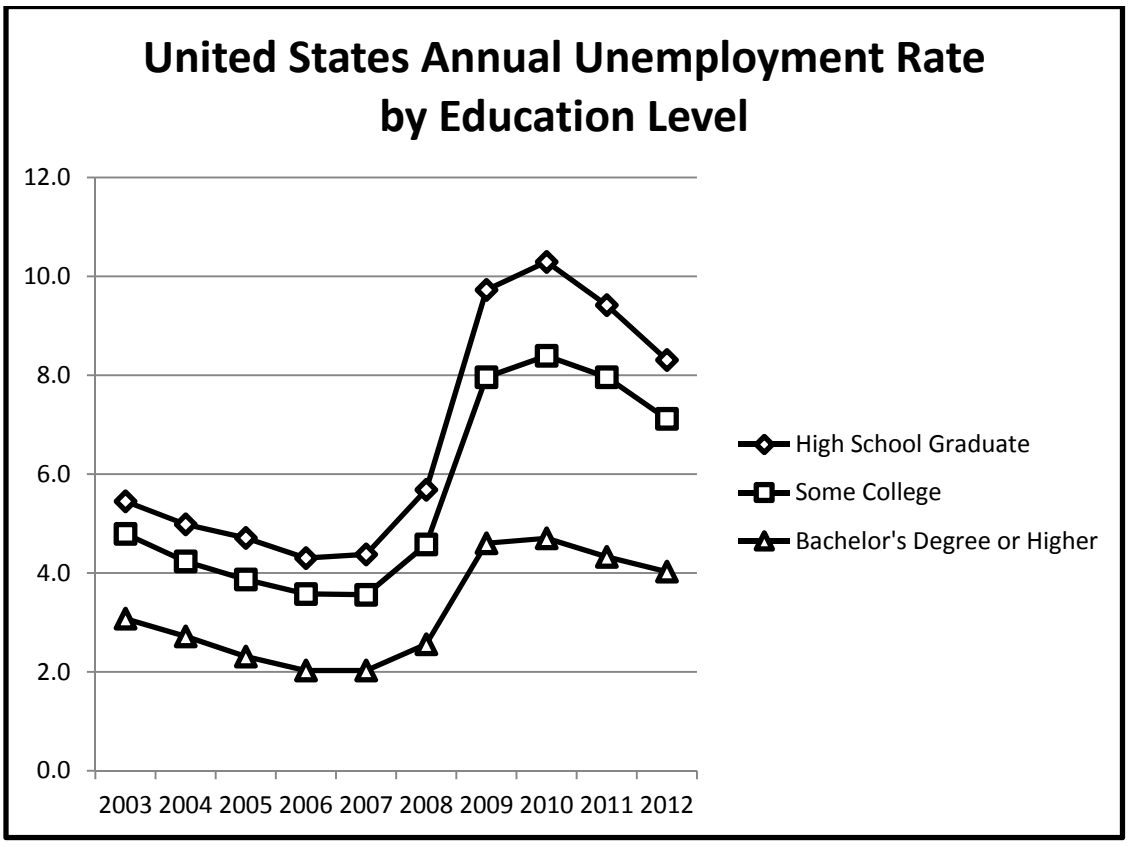
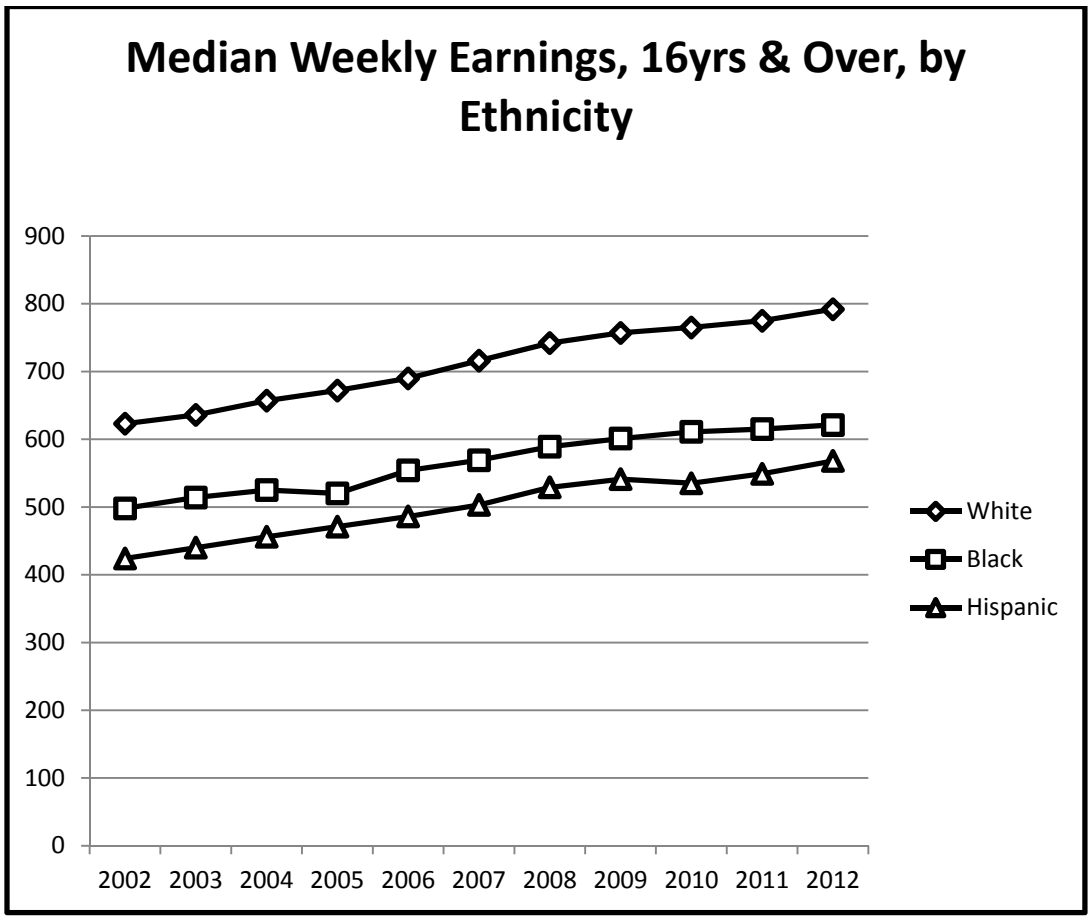


FIGURE 10



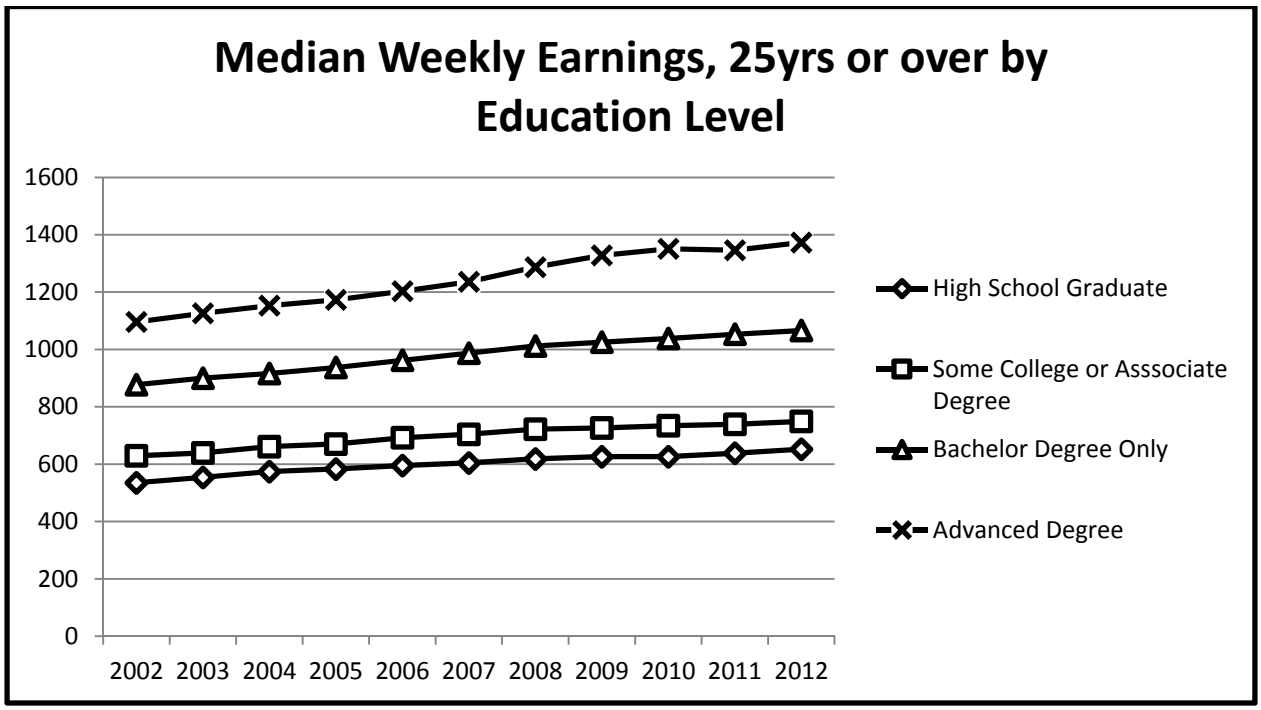
National earnings data also reveals a consistent earnings gap between the earnings of White workers and the earnings of their Black and Hispanic colleagues. Figure 11 shows that although median weekly earnings rose for all three demographic groups between 2002 and 2012, a consistent pattern of White workers earning the most, followed by Black workers in the income middle, followed by Hispanic workers earning the least is clear (USDOL, 2013).

FIGURE 11



The weekly earnings data represented through the educational attainment lens rather than the ethnic lens is displayed in Figure 12. As is seen with the unemployment data, there is a clear relationship between the level of educational attainment and the median weekly earnings – only this time the relationship is direct as would be expected.

FIGURE 12



During the last 50 years the income gap between high and low income families has widened and with that the achievement of students from high and low income families has also widened (Reardon, 2011). The income achievement gap, defined by Reardon (2011) as the achievement difference between a child from a family in the 90th percentile of the family income distribution and a child from a family at the 10th percentile, has grown sharply over the last 50 years, particularly since the 1970s. Importantly, at the same time that family income has become more predictive of achievement, achievement has become more predictive of adult earnings (Reardon, 2011). This combination of trends may decrease intergenerational mobility and be the precursor to an even more unequal and polarized society (Reardon, 2011).

Considering the economic data presented above and its clear connection to both ethnicity and educational attainment, I argue that to perpetuate the educational achievement gap discussed in the preceding section is akin to perpetuating the

employment/earnings gap. That this data is not universally considered a shame and national tragedy is troubling and suggests an abhorrent complacency on the part of policymakers and educators

In addition to the economic benefits of increased education for all, reducing the achievement gap will promote several social benefits. For example, the Organization for Economic Co-operation and Development (OECD) has reported that across fifteen OECD countries including the United States, increased education levels not only have direct economic benefits (discussed below), but also contributes to improved overall health, more active citizenship, and a happier lives (OECD, 2013). On average across 15 OECD countries, men and women who completed upper secondary education live eight and four yours longer than their lesser educated counterparts respectively (OECD, 2013). The United States was about average with secondary educated men living about eight years longer and secondary educated women living about five years longer than their lesser educated counterparts in the population (OECD, 2013).

Data show that adults who have attained higher levels of education are generally more likely than those with lower levels of educational attainment to engage in civic activities such as voting, volunteering, political interest, and interpersonal trust (OECD, 2013). Out of 25 countries with data the United States ranked worst with a 52% voting gap amongst adults aged 25-34 indicating that those adults who completed at least a secondary education were 52% more likely to vote than those who did not (OECD, 2013).

In addition to living longer and experiencing greater levels of civic engagement, more highly educated adults feel happier and are more satisfied with their lives than

lesser educated adults (OECD, 2013). On average in a 28 country analysis the gap in life satisfaction between adults with high and low levels of education was 18% (OECD, 2013).

The bottom line is that education has the potential to bring significant benefits to individuals and society that go well beyond its contribution to employability and income. An educational system that produces the gaps seen in the United States fails to produce a society in which all members have an equal opportunity to live productively, happily, and engaged in civic life.

Intervention Programs

Despite the suggestion of complacency, the fact is that for many years the achievement gaps among different groups of students have concerned educators and policymakers and many efforts have been made to address the achievement gaps (Guskey, 2005). For example, since the 1960s, the War on Poverty, the Economic Opportunity Act of 1964, the Elementary and Secondary Education Act of 1965, and the more recent No Child Left Behind Act (NCLB) were specific federal attempts to address these gaps in educational attainment (Guskey, 2005). Where NCLB went beyond previous legislation was its requirement for schools to not only report achievement separately for various demographic groups, but also to take specific steps to close any achievement gaps discovered (Guskey, 2005). Despite this requirement the data displayed above clearly shows that consistent gaps persist after over a decade of NCLB implementation.

Either independent of, or as a consequence of federal or state mandates, schools across the country have attempted many different college preparation interventions in an

effort to close the achievement gap. An implicit assumption in the very existence of college preparation intervention programs is that schools are failing to adequately prepare students for college thus school reform is needed (Tierney & Serra, 2002). Historically many efforts at improving instruction to address achievement gaps have focused solely on individual teachers however involving whole schools in improving the quality of instruction has become increasingly common among initiatives to correct achievement gaps (Timperley & Parr, 2007). Gandara and Bial (2001) studied 13 different intervention programs designed to prepare traditionally underrepresented students for college. Among the 13 intervention programs studied were programs that were designed to support individual high school students such as Posse, Neighborhood Academic Initiative (NAI), A Better Chance (ABC), and Upward Bound. The researchers also studied programs that were designed to support classes of specific subgroups of high school students including Advancement Via Individual Determination (AVID), Puente, College Pathways, and I Have A Dream (IHAD).

Of the intervention program listed above, AVID is a program that has been adopted at the site of the study, Fairview High School in New Jersey. AVID is perhaps the most well known national program that works directly with schools in raising student achievement, raising awareness about college, and promoting a college going culture within the school (Contreras, 2011). As I describe below, those overseeing the AVID program at Fairview High School are interested in engaging in a thorough evaluation to determine if AVID is producing the intended effects. Before the context of the study is described in greater detail it is essential to have a basic understanding of the AVID program.

Overview of Advancement Via Individual Determination (AVID). AVID is an educational reform program designed to narrow the achievement gap between socioeconomic and ethnic groups by preparing historically underrepresented students for enrollment in four year colleges (Hubbard & Mehan, 1999; Black, Little, McCoach, Purcell, & Siegle, 2008; Mehan, Hubbard, & Villanueva, 1994; Watt, Yanez, & Cossio, 2002-2003; Watt, Johnston, Huerta, Mendiola, & Alkin, 2008; Watt, Huerta, & Lozano, 2007). AVID builds on the premise that academically average students with potential will rise to the expectations placed before them (Contreras, 2011). AVID originated in 1980 at a San Diego high school where an English teacher named Mary Catherine Swanson decided to place low-achieving students in the college preparatory track and provide them an elective to support their work (Black et al., 2008; Lozano, Watt, & Huerta, 2009; Mehan et al., 1994; Watt et al., 2008). That 1980 initiative in one school began to spread locally, and later, throughout the country. AVID's mission today is to close the achievement gap by preparing students for college readiness and success in a global society (AVID, n.d.). Students are selected for AVID based on their academic potential. Students in AVID are often low-income or ethnic minority students, but neither is a requirement to be in AVID (Huerta, Watt, & Reyes, 2012). Both the students and their parents sign contracts indicating their understanding of the program and their commitment to it which constitutes a further selection mechanism (Guthrie & Guthrie, 2000; Mehan, Datnow, Bratton, Tellez, Friedlander, & Ngo, 1992; Watt et al., 2008).

The "hallmark feature" of the AVID program is the shifting of students from general education classes into college preparatory classes (Black et al., 2008; Hubbard & Mehan, 1999; Mehan et al., 1994; Watt, Huerta, & Cossio, 2004). AVID achieves its

mission by offering students a more rigorous college preparatory curriculum accompanied by an elective class in which study skills are taught (Black et al., 2008; Hubbard & Mehan, 1999). Students enrolled in AVID take an AVID elective course during one class period each school day. The AVID elective offers a foundation of support for academic preparation and college readiness (Huerta et al., 2012). The intent is that AVID students learn the skills necessary to be a successful student while in the AVID elective, and then armed with those skills students go on to their now college preparatory schedules and successfully master rigorous curricula (Mehan et al., 1994; Watt et al., 2008). The AVID elective class emphasizes collaboration, writing, problem solving, organization, and the Cornell note-taking process (Black et al., 2008; Mehan et al., 1994; Watt et al., 2002-2003; Watt et al., 2008). As it has spread to over 5,000 different schools AVID has developed a set of 11 uniform essentials (standards) to which all AVID schools must adhere (AVID, n.d.). New AVID schools are expected to adopt the AVID program with high fidelity, and if a school does not conform to AVID's 11 essentials then its license to use the AVID name is withdrawn (Black et al., 2008; Hubbard & Mehan, 1999; Lozano et al., 2009; Watt et al, 2007; Watt et al., 2008). These essentials (standards) as defined in the AVID Certification Report and Self Study Continuum (AVID, 2011) are:

1. Student Selection – AVID student selection must focus on students in the middle, with academic potential, who would benefit from AVID support to improve their academic record and begin college preparation.
2. Voluntary Participation – AVID program participants, both students and staff, must choose to participate in the AVID program.

3. AVID Elective During School Day – The school must be committed to full implementation of the AVID program, with students enrolled in the AVID year-long elective classes available within the regular academic school day.
4. Enrollment in Rigorous Curriculum – AVID students must be enrolled in a rigorous course of study that will enable them to meet requirements for university enrollment.
5. Reading and Writing – A strong, relevant writing and reading curriculum provides a basis for instruction in the AVID classroom.
6. Inquiry – Inquiry is used as a basis for instruction in the AVID classroom to promote critical thinking.
7. Collaboration – Collaboration is used as a basis for instruction in the AVID classroom.
8. Trained Tutors – A sufficient number of tutors must be available in AVID elective classes to facilitate student access to rigorous curriculum. Tutors should be students from colleges and universities and they must be trained to implement the methodologies used in AVID.
9. Data Collection & Analysis – AVID program implementation and student progress must be monitored through AVID Center Data System, and results must be analyzed to ensure success.
10. School & District Resources – The school or district has identified resources for program costs, has agreed to implement all AVID Implementation essentials and to participate in AVID Certification. It has committed to ongoing participation in AVID staff development.

11. Active Interdisciplinary Site Team – An active interdisciplinary AVID site team collaborates on issues of student access to and success in rigorous college preparatory courses.

Schools that implement AVID must annually track their performance using the Certification Report and Self Study Continuum (CSS). The CSS focuses primarily on the fidelity of implementation with respect to the 11 essentials above. After completing the CSS the level of the school's implementation of each AVID essential is classified as either Not AVID (Level 0), Meets Certification Standards (Level 1), Routine Use (Level 2), or Institutionalization (Level3) (AVID, 2011). Self-reported ratings must be supported by evidence, typically in the form of document or web-based artifacts that demonstrate implementation fidelity. This evidence is reviewed by a trained AVID Director. To become a certified AVID school the school must be rated at Meets Certification Standards (Level 1) or above for all 11 essentials (AVID, 2011).

Fairview High School Context

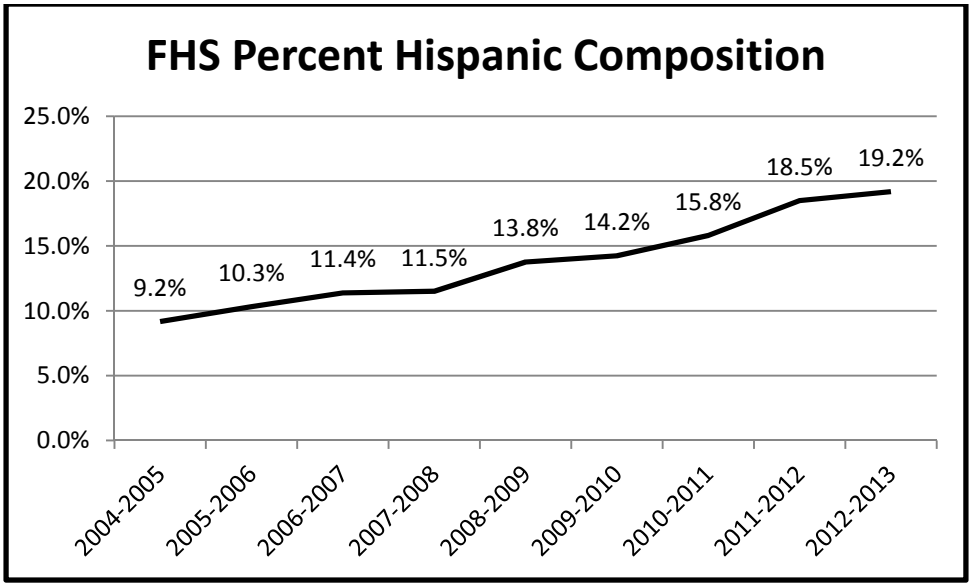
Fairview High School (FHS) is experiencing a demographic shift. Table 1 shows two clear trends. The first is that the percentage of the student body that is Hispanic has been steadily on the rise over the last several school years (Figure 13 shows this graphically). The second is that the percentage of the student body that is White has been steadily on the decline during the same period.

TABLE 1

Ethnic Composition of the FHS Population

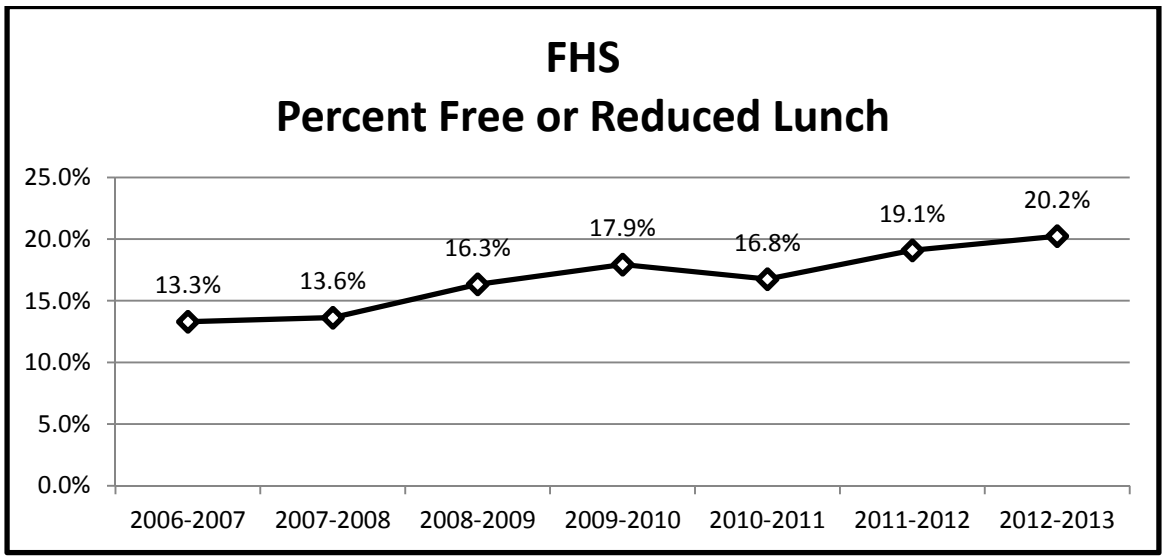
School Year	Hispanic	Black	White
2004-2005	9.2%	8.2%	71.2%
2005-2006	10.3%	8.0%	69.2%
2006-2007	11.4%	8.1%	68.8%
2007-2008	11.5%	8.8%	68.0%
2008-2009	13.8%	10.6%	64.8%
2009-2010	14.2%	10.5%	65.1%
2010-2011	15.8%	9.0%	64.7%
2011-2012	18.5%	8.2%	62.6%
2012-2013	19.2%	7.7%	63.0%

FIGURE 13



The percentage of students qualifying for free or reduced lunch has also been increasing each of the last several school years at Fairview High School. The total number of students qualifying in the 2012-2013 school year was 20.2% which Figure 14 shows was the highest rate on record in the school's recent history (Internal Reports, FHS Student Information System).

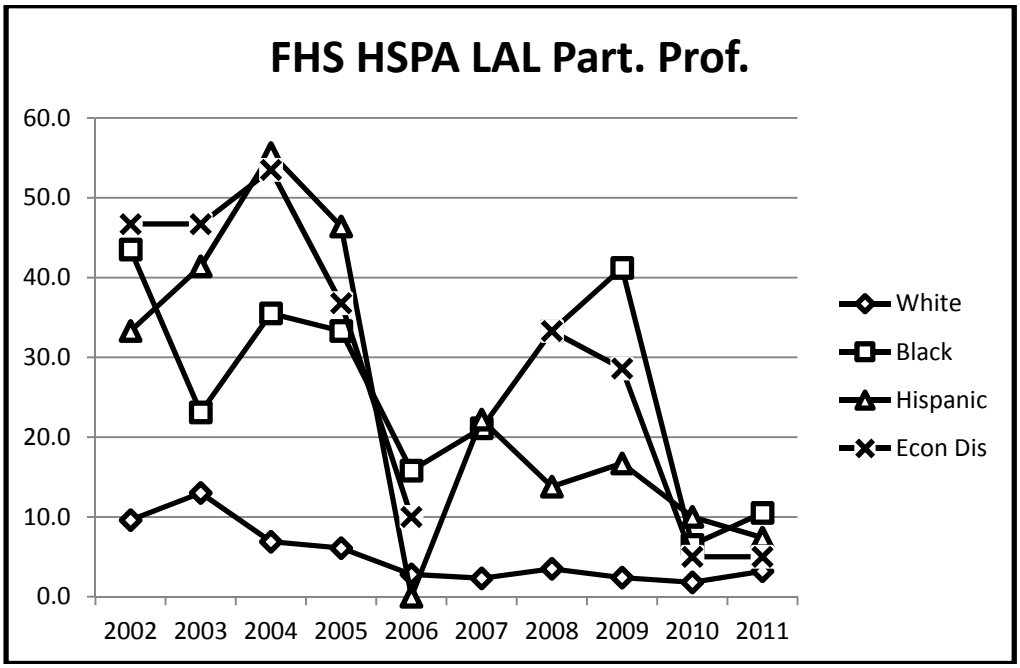
FIGURE 14



When the performance data at Fairview High School is examined, the meaning of these demographic shifts at Fairview High School becomes more pronounced. The state of New Jersey requires that (with few exceptions) all students graduating from high school must be proficient on the Math and Language Arts sections of the state High School Proficiency Assessment (HSPA). Students scoring in the partially proficient range must either retest and reach the proficiency level or complete an alternative state assessment on which they demonstrate proficiency. If they do not demonstrate proficiency, then they will fail to earn a high school diploma. Figures 15 and 16 below show that on both the Language Arts and Math sections of the HSPA White students at Fairview High School have been much less likely to score in the partially proficient range than Hispanic and Black students over the ten year period beginning in 2002 and ending in 2011. While Hispanic students in particular have been far more likely to score in the partially proficient range, the data does appear to suggest some closing of the gap between White and Hispanic students over the last half of this time period – particularly

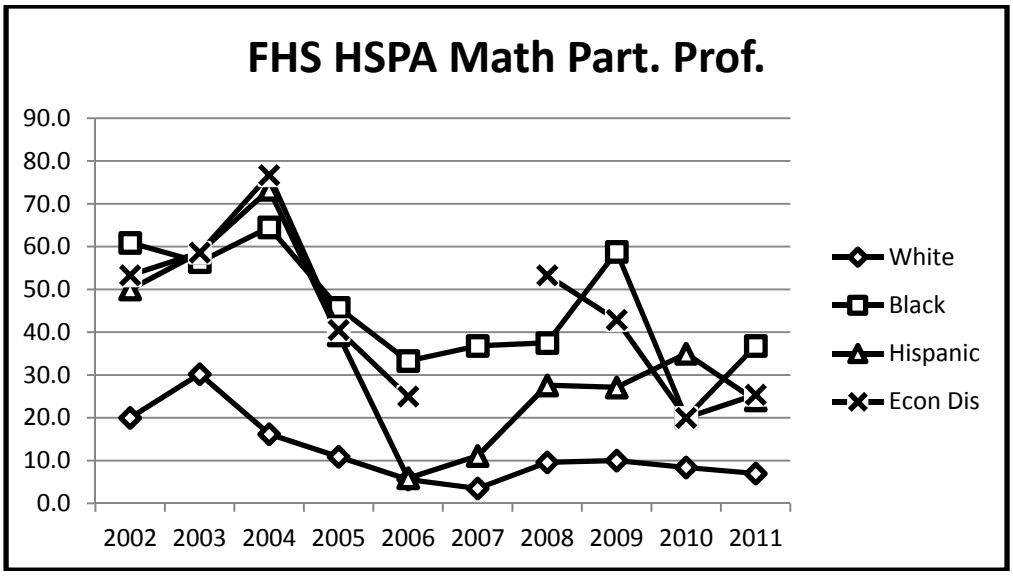
with respect to Language Arts performance (even if the anomalous 2006 year is removed). Regardless of this, a clear gap remains obvious.

FIGURE 15



NOTE: All data taken from the New Jersey Department of Education's Historic Report Card Data website at http://education.state.nj.us/rc/historical.html.

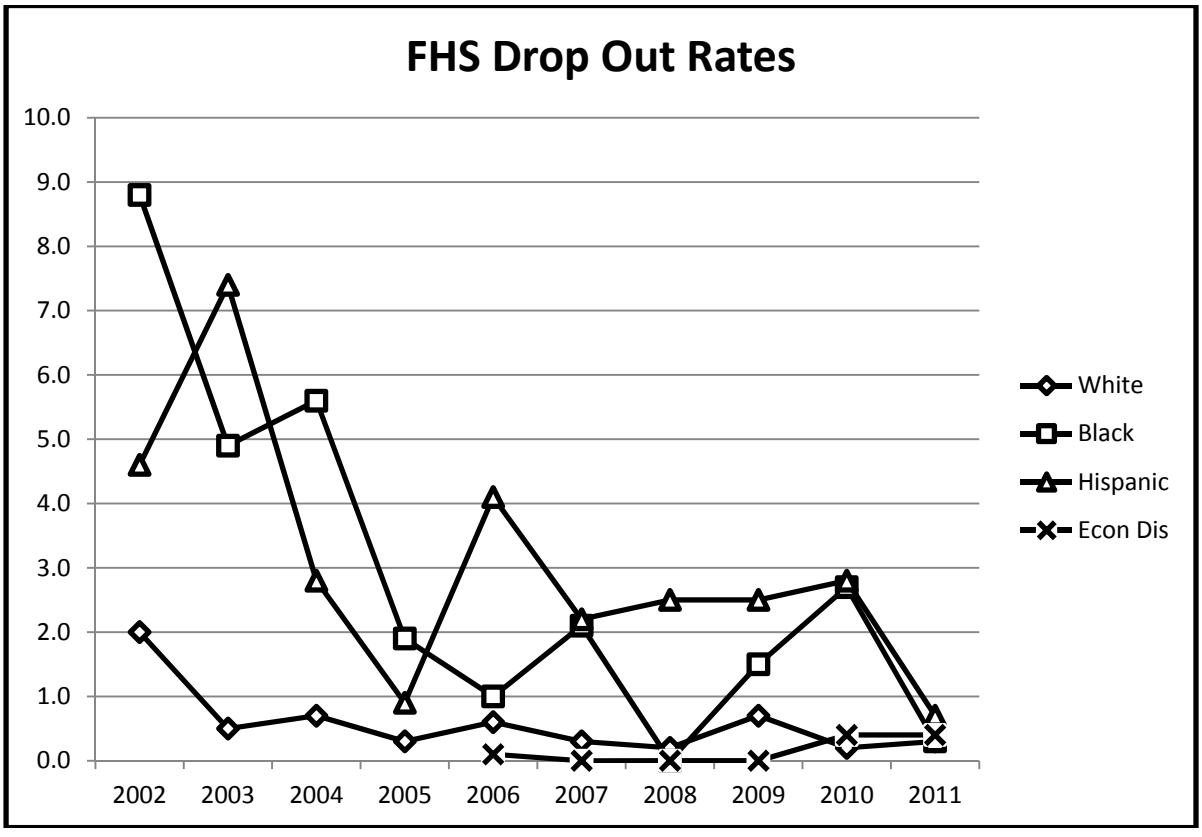
FIGURE 16



NOTE: All data taken from the New Jersey Department of Education's Historic Report Card Data website at http://education.state.nj.us/rc/historical.html.

Another manner of exploring the achievement gap at Fairview High School is to examine the dropout rates for different demographic groups. Over the 10 year period beginning in 2002 and ending in 2011 the average annual dropout rate for Hispanic students was 3.1%, for Black students was 2.9%, and for White students was 0.6%. Although most would not characterize the dropout rate for Hispanic and Black students at Fairview High School as high in an absolute sense, on average the dropout rate for Hispanic and Black students has been higher than that of White students by a factor of five. Figure 17 shows an encouraging downward trend in the Hispanic and Black dropout rate, however the trend of a consistent gap between White students and their Hispanic and Black classmates remains.

FIGURE 17



NOTE: All data taken from the New Jersey Department of Education's Historic Report Card Data website at http://education.state.nj.us/rc/historical.html.

AVID at Fairview High School. In the 2010-2011 school year Fairview High School began a full year of planning for the implementation of the AVID program. During that year a student selection process was conducted by a nine member AVID site team composed of administrators, counselors, and teachers. Twenty-five students were selected for the inaugural AVID class. These students were selected based on whether they fit the AVID profile of middle achieving students with potential for success in rigorous courses who typically, though not exclusively, fell into one or more of the following categories: (1) a member of an ethnic minority; (2) from a low-income family; and (3) would be the first in their family to attend college. After one academic year of implementation in 2011-2012 Fairview High School nearly tripled its AVID program from 25 to 67 students in the 2012-2013 school year by following the same selection process to select students from grades 9 and 10, as well as 11.

Purpose of the Study

New Jersey schools are experiencing a tightening of their school budgets and Fairview High School is no different. The planning year for AVID and the first year of implementation were paid for out of Title 1 grant funds; however, the school district made the decision that all funding for AVID at Fairview High School for the 2012-2013 school year and beyond needed to come from the local budget. Because of the cost of AVID (approximately $30,000 annually for license fees, library fees, and professional development) and the limited information available on the impact of precollege preparation programs (including AVID) on low-income, minority, and first generation students (Mendiola et al, 2010) AVID's impact at Fairview High School needed to be measured and must show positive outcomes if AVID is going to continue to be funded.

Beyond the fiscal purpose, the findings of this study provide insight into whether or not AVID is helping to reduce the achievement gap at Fairview High School. If AVID is not reducing the gap then the school community must work to identify other strategies that will contribute to a reduction in the gap at Fairview High School.

Research Question

The research question that this study is designed to answer is: What effect does the participation in AVID at Fairview High School have on selected student performance indicators after at least one year of a student's enrollment in the AVID elective class? Using a quasi-experimental research design and quantitative data collection and analysis methods this study examined the following achievement indicators to determine if AVID students have outperformed their peers adjusting for pre-existing differences: Grade Point Average (GPA), strength of student schedules, attendance rates, standardized test performance, registration for the PSAT, and score on the PSAT. In addition to informing the decisions of administrators at Fairview High School regarding AVID, this study addressed some of the limitations in the current literature identified below and in doing so has made a contribution to the larger knowledge base regarding AVID and similar pre-college interventions.

CHAPTER II

Literature Review

This review begins with a brief overview on the concept of college readiness, followed by an overview of research on effective practices for all types of intervention programs that focus on college preparation. This general review of the broader field is followed by a review of the literature on AVID that focuses on conclusions about program effectiveness and the methodological limitations of this research.

College Readiness & College Preparation Programs

A widely accepted view of college readiness offered by Conley (2007) is any student who can "enroll and succeed, without remediation, in a credit-bearing general education course at a postsecondary institution" (p. 5). Unfortunately, while the vast majority of American high school students plan to attend college too many are not ready for the rigors of the postsecondary curriculum as indicated by the large percentage of students required to take one or more remedial courses and the large percentage of students that do not persist after their first year of college enrollment (Porter & Polikoff, 2012). Dominant factors in determining whether a student will be college ready are the type and quality of academic preparation and guidance in the kindergarten through 12th grades (Haro, 2004) and a student's academic behaviors such as self-management skills, attitudes, and habits necessary for students to meet the challenges of a college workload (Lombardi et al., 2011). Academic behaviors found to be associated with college and career readiness are: goal-driven behaviors, persistence, study skills, and self monitoring (Lombardi et al., 2011; Byrd & Macdonald 2005).

Over the past four decades numerous policies and programs addressing the dominant factors above have been developed and implemented with the goal of increasing college enrollment for historically underrepresented groups (Perna, Rowan-Kenyon, Bell, Thomas, & Li, 2008). Despite these efforts, college access and choice remains stratified by socioeconomic status and ethnicity (Thomas & Perna, 2004). For example, though the Hispanic population is growing rapidly in the United States, the quality of academic preparation and guidance by which so many of these students may or may not find their way into colleges and universities remain practically the same as they have over the last five decades (Haro, 2004). This reality raises questions about the effectiveness of existing programs. To that end, Gandara and Bial (2001) published a review of the empirical literature on intervention programs designed to increase college participation of low-income and minority students. After reviewing 13 precollege intervention programs they concluded that the programs that were most effective had the following elements in common: (a) the presence of a key person to monitor students/programs; (b) providing high quality instruction through a rigorous curriculum; (c) focusing on long term gains rather than short term gains; (d) paying attention to the cultural backgrounds of students; (e) providing a peer group that is supportive of academic aspirations; and (f) providing financial assistance and incentives to students/families. One of the more troubling findings was that most programs operated on the assumption that they were effective while few programs engaged in thorough evaluations to validate their assumptions (Gandara & Bial, 2001). Furthermore, the authors concluded that attrition, lack of evidence on academic achievement, and the absence of longitudinal data on the students account for severe limitations in our ability

to understand what strategies work and what strategies do not work (Gandara & Bial, 2001).

AVID

Those who have researched AVID have employed quantitative and qualitative approaches to program evaluation and have focused primarily on achievement indicators and the perceptions of stakeholders. Several of the studies identified in the next sections have resulted in findings supportive of AVID. However, results across the literature have not established definitively whether or not AVID has a statistically significant impact on targeted outcome variables. In the sections that follow I review AVID's impact on student Grade Point Averages (GPAs), state assessments, rigor of courses, and college enrollment. In addition, I review stakeholder perceptions and a few less common indicators that have been studied. Limitations of the existing body of research that I discuss in greater detail below are; 1) an overreliance on descriptive rather than inferential statistics, 2) the use of quasi-experimental designs with comparison groups that vary in their pre-treatment equivalence to the AVID students, and 3) the lack of geographic and demographic variety in the contexts and samples studied in the current literature.

GPA. Student Grade Point Averages (GPAs) are an important measure of student achievement and an important variable in determining college readiness. Despite some limitations including a lack of a common metric across schools, high school GPA has been found to be slightly more predictive of first year college GPA as aptitude tests specifically built for that purpose such as the SAT (Kobrin, Patterson, Shaw, Mattern, & Barburti, 2008). The literature on AVID's impact on student GPAs has yielded

inconsistent findings. Inferential statistics have resulted in the conclusion that AVID has a statistically significant positive effect on student GPAs in one cohort studied, but not in another (Black, Little, McCoach, Purcell, & Siegle, 2008). A plausible explanation offered by the researchers for the inconsistency across cohorts was that the cohort that experienced the statistically significant positive effect was taught by an experienced AVID teacher while the other cohort was taught by a new AVID teacher (Black et al., 2008). Researchers relying on descriptive statistics have found that AVID students had a slight drop in average grades for science and social studies (Watt et al., 2002-2003) and a slight increase in English and math grades (Watt et al., 2002-2003; Watt et al., 2007). AVID has also been found to have different levels of effectiveness on student academic performance across different groups on the basis of gender (Guthrie & Guthrie, 2000), and the number of years a student has been enrolled in AVID (Guthrie & Guthrie, 2000; Black et al., 2008). Considering the existing data, no definitive conclusion can be reached about whether AVID has a positive impact on student achievement as measured by student GPAs.

State Assessments. The level at which students perform on state assessments is another measure of student achievement. AVID students have outperformed comparison groups on state assessments in math and literacy (Black et al., 2008; Lozano et al., 2009; Watt et al., 2006; Watt, Powell, & Mendiola, 2004; Watt et al., 2002-2003). AVID students have also outperformed their classmates on end-of-course (EOC) assessments in algebra and biology (Watt et al., 2004). For example, in select Texas high schools AVID students outperformed their classmates by nearly 10 percentage points in the year 2000 and nearly 21 percentage points in the year 2002 (Watt et al., 2004). AVID students in

the same schools outperformed their classmates on the 2000 Texas Assessment of Academic Skills (TAAS) in reading by seven percentage points and math by 15 percentage points (Watt et al., 2004). The performance of AVID students on the Texas Higher Education Readiness Component (HERC) was higher than a comparison group in English, but not in math (Lozano et al, 2009). Though not conclusive, the existing research does present a compelling case for a positive relationship between AVID and student performance on standardized assessments. Cautions with this set of research include the differing results for various subject areas, the dubious use of the rest of the class as a comparison group, and that the studies relied heavily on descriptive statistics to reach conclusions.

Rigor of Courses. The rigor of student coursework is indicative of the level of a student's college readiness – particularly for Black and Hispanic students (Adelman, 2004). In particular, Advanced Placement (AP) course involvement is a positive predictor of educational success and satisfaction for intellectually talented students (Bleske-Rechek et al., 2004). AVID students have been found to enroll in AP courses in numbers greater than comparison groups (Watt et al., 2004; Watt et al., 2006; Watt et al., 2007). In a study of AVID in Texas researchers found that 87% of all AVID students in the 2000-2001 school year were enrolled in at least one AP course (Watt et al., 2004) while another study found that 73% of AVID graduates from Texas took at least two AP courses (Mendiola et al., 2010). Similarly, Texas high schools with AVID increased their school wide AP enrollment percentage from 15.8% to 18.7% between 1998 and 2002 and had similar increases in AP testing rates (Watt et al., 2006). There has also been evidence that some AVID students drop AVID in the senior year, not because of dissatisfaction

with the program, but because they want to make room in their schedules for an additional AP course (Watt et al., 2008). This suggests the possibility that AVID AP enrollment numbers are underreported.

AVID student access to rigorous high school curricula has been analyzed relative to students enrolled in Gaining Early Awareness and Readiness for Undergraduate Programs (GEAR UP). Findings included that GEAR UP students performed the highest, taking an average of 2.90 AP courses while AVID students took an average of 2.44 AP courses and the comparison group averaged 2.25 AP courses (Lozano et al., 2009).

The data on the rigor of coursework for AVID students, like other data above, presents enough evidence to suggest a direct relationship between enrollment in AVID and enrollment in rigorous courses such as AP courses; however, the data comparing AVID students to GEAR UP students in particular suggests that intervention programs other than AVID may be able to produce a more powerful effect on the rigor of student coursework. Another element that is not measured in the current literature is the differences in rigor between general or low track courses and college preparatory tracks that are not at the AP level. For example, AVID students may well be enrolled in a more rigorous set of courses than they otherwise would have been without AVID even without taking an AP course.

College Enrollment. AVID students have been found to enroll in four year colleges at higher rates than comparison groups (Mehan et al., 1992; Mehan et al., 1996; Watt et al., 2004; Watt et al., 2002-2003). Mehan et al. (1996) found that students who participated in AVID were over 20% more likely to enroll in four year colleges and universities than the comparison group. AVID students in the San Diego school system

with parents that did not have a college education enrolled in colleges more often than students with parents who had a college education (Mehan et al., 1992).

Some of the success AVID students have had in enrolling in four year colleges may be due to the fact that AVID students have been found to apply to more colleges and apply for more scholarships than comparison groups (Lozano et al., 2009). Comparison studies that have analyzed AVID data relative to data from students participating in another college preparation intervention program (GEAR UP) have demonstrated that AVID students present a higher level of college knowledge – essentially a construct that accounts for the awareness of the nuances of the application and acceptance process (Lozano et al., 2009; Watt et al., 2007). High college enrollment numbers for AVID students in the state of Texas may also be due in part to the fact that 81% of AVID students reported that they earned at least six college credits while a high school student (Mendiola et al., 2010).

The research on AVID's impact on college preparation and college enrollment is compelling at first glance in that none of the findings contradicts or questions AVID's effectiveness. However, the conclusions are generally derived from data that is self-reported or simple descriptive statistics. More compelling findings based upon documented data and inferential statistics would provide greater confidence in any conclusions about the effectiveness of AVID in sending students to four year institutions.

Perceptions. Surveys, interviews, and focus groups have revealed that stakeholders have uniformly reported positive perceptions about the AVID program (Black et al., 2008; Watt et al., 2008). Parents and teachers reported agreement that the program prepares students for success in rigorous coursework and that AVID has a

positive impact on student attitudes, behavior, and work ethic (Black et al., 2008). AVID students have cited the following perceptions they hold that contribute to their willingness to stay enrolled in AVID through their senior year of high school: a sense of an "AVID family", family support for the program, and the usefulness of AVID strategies in their academic classes (Watt et al., 2008). Though the literature on program perceptions is uniformly positive, the implied relationship between the perceptions of stakeholders and the student outcome measures is not substantiated in any of the existing research.

Isolated Indicators. AVID's effects on several other variables have been documented in isolated studies, though the effects are not seen widely across the literature. AVID has been found to have had a positive impact on student attendance (Watt et al., 2002-2003; Watt et al., 2004), school accountability ratings (Watt et al., 2008; Watt et al., 2006; Watt et al., 2004), preparation for college enrollment (Watt et al., 2004; Watt et al., 2008), and for providing academic and personal support to students (Watt et al., 2008). In addition, ethnic minority AVID students have also been found to strengthen their academic identities (Mehan et al., 1994), AVID students have demonstrated higher educational aspirations than peers (Lozano et al., 2009), principal leadership has been shown to be essential to program success (Watt at el, 2010), and schools that house AVID programs are said to develop an "AVID effect" which uplifts instruction and learning across the entire school (Mehan et al., 1996; Watt et al., 2002-2002; Watt et al., 2004). Each of these reported effects is positive, though further study is necessary to determine to what extent each of these findings is related to AVID rather than other variables.

Conclusions & Limitations of Existing Research on AVID

A significant limitation of the existing research is that the comparison groups that have been used often have not met the criteria of a valid comparison group. This limitation is critical because quantitative studies are typically intended to reach valid conclusions about the degree of confidence one can have in the findings. When evaluators rely on descriptive data they fail to determine whether or not findings are statistically significant and thus have not taken into account the possibility that differences between AVID participants and other children may have occurred purely by chance. The comparison groups used in prior studies included AVID students prior to their enrollment in AVID (Watt et al., 2002-2003), all students at a given school in the same grade level as the AVID students (Watt et al., 2004; Watt et al., 2002-2003), local and national averages of students in the same grade as AVID students (Mehan et al., 1992; Watt et al., 2004; Watt et al., 2002-2003), students with different years of experience as an AVID student (Guthrie & Guthrie, 2000), students participating in the GEAR UP program (Lozano et al., 2009), and students that were demographically similar to AVID students but were not enrolled in AVID (Watt et al., 2006; Black et al., 2008). Of these groups, the last two most closely approximate the students that enroll in AVID; however, they represent the exception as the comparison group rather than the norm in the existing body of research. Comparison groups that include entire grades at a school or local, state, and national averages fail to account for the fact that AVID targets a specific type of student. Therefore, the most appropriate comparison group would be middle achieving students often from a historically underrepresented socioeconomic group at schools that have an AVID program. This group would fit a quasi-experimental

model that assumes that the treatment group and comparison group are essentially the same, with the exception that the former receives the treatment and the latter does not. This would add to the validity of any study of AVID.

Much of the research on AVID has been concentrated in Texas (Lozano et al, 2009; Mendiola et al., 2010; Watt et al, 2010; Watt et al., 2008; Watt et al, 2007; Watt et al., 2006, Watt et al, 2004; Watt et al., 2002-2003) and in California (Mehan et al., 1999, Mehan et al., 1996, Mehan et al., 1994; Mehan et al., 1992) and has been conducted by a small number of core researchers. In addition, the qualitative research has often been in predominantly low-income locations with heavy Hispanic populations in Texas and California and thus the transferability of findings to other contexts and demographic groups (such as middle class suburban contexts in New Jersey) is questionable.

The research design below addressed limitations of the existing literature by: 1) constructing a more appropriate comparison group in which treatment and comparison students are essentially the same prior to the treatment; and, 2) using inferential statistics in analyses controlling for a variety of variables to provide tests of statistical significance regarding AVID's impact. The study was conducted in Fairview High School and the results are directly relevant to decisions regarding AVID at Fairview High School. In addition, the study broadens the generalizability of the research on AVID by using inferential statistics and extending the body of research to the context of a middle-to-high income school district in a mid-Atlantic state.

CHAPTER III

Methods

The logic of AVID is that when students from low income and minority backgrounds with moderate academic potential are provided targeted academic support and enrolled in rigorous courses they will be prepared for, attend, and succeed at a four year college. In addition, the logic assumes that similarly situated students without AVID support will enroll in less rigorous courses and perform at lesser levels on academic indicators such as grade point average (GPA) and state and national assessments.

Evaluation Design

The quasi-experimental quantitative design detailed below was used to evaluate AVID's effects on achievement indicators after two years of implementation at Fairview High School in New Jersey. At the start of the 2012-2013 school year Fairview High School had an AVID elective class in grades 9, 10, and 11 with a total of 67 students enrolled. The primary goal of the evaluation was to determine how well the 67 AVID students have performed academically relative to a comparison group of 69 students after the completion of the 2012-2013 school year.

Explanation of Methods

Following Patton (2008) the AVID site team was the principal client group for whom the evaluation results were targeted. This nine member team is composed of administrators, counselors, and teachers. Collectively, the site team at Fairview High School, as in all AVID schools, takes responsibility for ensuring that AVID is implemented with fidelity to the 11 AVID essentials. The site team expects AVID

students to demonstrate signs that they are working toward the ultimate goal of being college-ready. Also, though college-readiness is not easily defined, measuring several related indicators (described below) provides enough information to determine if students are heading in that direction relative to a comparison group.

A critical goal in evaluation design "is to avoid gross misfits – that is, when you are planning one type of method but another is really more advantageous" (Yin, 2009, p. 8). Furthermore, when considering appropriate methods one must consider the type of research questions posed and the extent of control an evaluator has over the behavioral events (Yin, 2009). Therefore, the design of the study began with the construction of the research question below.

Research questions have both substance and form (Yin, 2009). The research question that this evaluation attempts to answer is: What effect does the participation in AVID at Fairview High School have on selected student performance indicators associated with college readiness after at least one year of enrollment in the AVID elective? This impact evaluation question is best answered through the collection and statistical analysis of quantitative data.

For this evaluation, a quasi-experimental design was used for the collection and analysis of quantitative data. Though a randomized field experiment is the most scientifically credible impact assessment design, it is not politically or practically feasible to randomly assign students to AVID at Fairview High School in sufficient numbers. The AVID model calls for purposeful selection of students for the program, the number of eligible students is relatively small, and all can be accommodated in the program. The evaluator could not control which students were assigned to AVID for professional and

ethical reasons. The students enrolled in AVID were enrolled as a consequence of the selection process described in the following section which was purposeful (eliminating the ability for random selection) and conducted by the nine member AVID site team. A quasi-experimental design was used that constructed a comparison group that was similar to the AVID students demographically and in terms of prior achievement and statistically adjusted for remaining differences. Quasi-experimental designs essentially follow the logic below (Rossi et al., 2004):

> Net effect= [gross outcome for treatment group]-[gross outcome for comparison group] +/- [uncontrolled difference between groups] +/- [design effects and stochastic error]

The most common of these designs involves "constructing control or comparison groups in an attempt to approximate a randomized design" (Rossi et al., 2004, p. 310). In quasi-experimental designs there will always remain some question about whether the comparison group is sufficiently comparable to the treatment group on all relevant characteristics and experiences (Rossi et al., 2004). However, the strategy described below details how the comparison group in this study was selected to be comparable to the treatment group, and a statistical comparison was used to assess their similarity. Moreover, the statistical controls employed in the data analysis adjusted for remaining observed differences between the treatment and comparison groups.

Participants and Sampling Strategy

The sample for this evaluation consists of a treatment group of 67 students and a comparison group of 69 students. The 67 treatment students are those who have been enrolled in the AVID elective class for at least one year at the time data collection was

undertaken (at the end of the 2012-2013 school year). The comparison group constructed for this evaluation was selected before AVID was provided to the treatment group, as described below. When selecting those students that would receive the treatment the teaching faculty was provided with a list of criteria describing the typical AVID student. The faculty was given the following: *The typical AVID student may be low-income (but not necessarily); may be the first in the family with plans to attend college (but not necessarily); is not currently reaching his/her potential; with support would be able to perform better; is currently a middle achieving student (i.e. not failing but not at the top of the class); is not a behavior challenge; is a motivated student (or would be with proper support*). From this the faculty were asked to nominate students who they believed might be a good fit with an emphasis that AVID students would not necessarily meet each of these criteria but rather would typically meet multiple criteria on the list. From those that were nominated some students chose to apply and some did not. Those that did apply and were accepted into AVID constitute the treatment group for the study. Those that did not apply or applied but were not admitted to the program constitute the comparison group for the study.

The 69 students in the comparison group are students that are similar to the AVID students in terms of their demographics and their prior academic achievement. Table 2 presents the results of the ANOVA which was used to test for differences between treatment and comparison groups prior to the study. As can be seen there were no statistically significant differences between the AVID students and the comparison group on any of the demographic or prior achievement variables. In terms of demographics, AVID students were slightly more likely than comparison students to be male, slightly

more likely to be either Black or Hispanic, and slightly more likely to be on free or reduced price lunch. In terms of prior academic achievement, AVID students performed slightly better than comparison students on some measures while the comparison students outperformed AVID students on others. Again, any differences between the two groups were not significant.

TABLE 2

Comparison of AVID and Comparison Group Prior to Treatment

	AVID		**Comp.**		**Significance**
Variable	*n*	*Mean/Percent*	*n*	*Mean/Percent*	
Percent Male	67	52%	69	43%	0.310
Percent Black or Hispanic	67	63%	69	57%	0.468
Percent Free or Reduced Lunch	67	43%	69	32%	0.172
GPA One Year Prior	67	3.3812	69	3.2578	0.197
GPA Two Years Prior	66	3.5940	68	3.5074	0.294
NJASK8Math	64	218.52	65	216.97	0.721
NJASK8Language Arts	64	223.98	65	220.62	0.253
NJASK7Math	61	215.08	63	214.49	0.899
NJASK7Language Arts	61	214.85	62	214.60	0.949
NJASK6Math	60	218.62	61	216.30	0.547
NJASK6Language Arts	60	207.12	61	208.36	0.680

Data Collection Procedures and Measures

The six dependent outcome variables were collected and analyzed as indicators of college readiness. These are: GPA, strength of schedule, standardized test scores, registration for and performance on the PSAT, and school attendance. The GPA and attendance data was available through Fairview High School's student information system. The strength of schedule indicator required calculation based on information included on each student's transcript. The following procedures were followed to calculate each student's strength of schedule:

1. Each student's transcript was examined to determine what track the student was placed in for the four core content areas of Math, Science, Social Studies, and English.
2. Each of these four core content area courses was then assigned a ranking between 1 and 3 based on the level of rigor of the track with 1 being the least rigorous and 3 being the most rigorous.
    a. Any course that was titled as a General, Principles, or Intermediate level course was given a 1 because these courses represent the lowest non-resource or self-contained courses at Fairview High School.
    b. Any course that was titled as an Academic, Lab, or Regular level course was given a 2 because these courses represent the standard college preparatory track at Fairview High School occupying the track above the levels noted above and below the advanced levels noted below.
    c. Any course that was titled as an Honors, Dual Enrollment, or Advanced Placement (AP) course was given a 3 because these courses represent the most rigorous courses at Fairview High School.
3. Each student's transcript was analyzed for the most rigorous elective course on their schedule. Any student enrolled in an Honors, Advanced Placement (AP), or Dual Enrollment elective course was given an additional 1 point to add to their total sum to represent the additional rigor the student was registered for in elective courses beyond the four core content areas.

> Example: The transcript reveals that a grade nine student enrolled in an Intermediate Algebra I course (rank of 1), a Lab Biology course (rank of 2), an Honors World History course (rank of 3), an Academic English I course (rank of 2), and did not enroll in an advanced elective course (rank of 0). The strength of schedule indicator for this student is the sum of these values, 8.

The standardized test data in Math and Language Arts came from three different grade level assessments. The grade 11 students took the New Jersey state required High School Proficiency Assessment (HSPA), the grade 10 students took the school district's local Pre-HSPA Assessment (PHA), and the grade 9 students took the ACT Explore assessment. The Math and Language Arts scores for each assessment are based on different scales so handling the raw scores collectively would not work. Regression analyses were performed separately for each grade level's Math and Language Arts assessment to estimate the impact of AVID. The scores from all three grade level assessments were also standardized using the z-score calculation tool in SPSS so that for each assessment a mean of 0 and a standard deviation of 1 was established. This allowed the scores from all three grade level assessments to be pooled together in a single analysis.

PSAT registration data and scores were retrieved from internal Fairview High School reports received from the College Board. The PSAT data applied only to the grade 10 and 11 members of the sample.

As mentioned above, data were collected on a variety of student background characteristics to statistically control for incidental differences between treatment and

comparison groups. All student demographic and performance data were obtained from the student information system at Fairview High School and each student's cumulative academic folder. The student information system is an electronic database that houses demographic, academic, attendance, and conduct information on each student for each year of enrollment at Fairview High School. The cumulative academic folders were used to collect the pre-test NJASK data and pre-test GPAs for students during their sixth, seventh, and eighth grade school years.

Human Subjects Protection

IRB approval for exemption category one was obtained on June 12, 2012. Data was drawn from naturally occurring data at Fairview High School. All student data remained confidential.

Data Analysis Procedures

One of the challenges of quantitative data analysis is to maintain the integrity necessary to ultimately be able to make some inference about causality. The extent to which an intervention can be said to have caused observed outcomes is one of the crucial interpretation issues in evaluation (Patton, 2008). Similarly, unbiased estimates of the net effects of a treatment depend largely on the extent to which the design minimizes critical differences between the treatment and comparison groups (Rossi et al., 2004). The data analysis procedures detailed below demonstrate how the effects of differences between the treatment and comparison groups in this study were minimized through inferential statistical controls. Table 3 describes the coding of categorical variables to aid in interpretation of the analyses reported.

TABLE 3 Data Codes for Independent Variables

Variable	Long Form	Short Form	Code
Gender	Male	M	1
	Female	F	0
Ethnicity	White	W	0
	Hispanic	H	1
	Asian	A	0
	Black	B	1
Free or Reduced Lunch Status	On Free or Reduced Lunch	Y	1
	Not on Free or Reduced Lunch	N	0
Treatment or Comparison Group	Treatment	T	1
	Comparison	C	0

Initially data were entered into a Microsoft Excel spreadsheet that was subsequently imported into SPSS (Premium GradPack 20 version), a statistical analysis software package. A codebook was created and examined to determine the number of valid data entries and missing cases for each variable as well as to check for coding errors. Descriptive statistics were calculated including central tendencies and dispersions. In particular, the median and mode values were analyzed to determine the extent to which they were close (indicating a normal distribution). Frequencies were examined to see if anything did not make sense. For example, a GPA value beyond what is possible was detected for one student in the sample. This was clearly an error of data entry that required correction. The third step was to create histograms for each of the independent variables to further examine the distributions. SPSS superimposes what would be a normal distribution over the histogram for the variable and allows one to

determine if the actual distribution approximates the normal distribution that would be expected. Nothing unexpected was found. The fourth step in setting up the data was to calculate correlations among the independent variables. The correlation table was analyzed to determine which variables were necessary to include in the model and which variables were extraneous. As grade 6 and grade 7 NJASK scores had a relatively high number of missing values and were highly correlated with grade 8 NJASK scores, it was decided that the grade 6 and grade 7 NJASK scores were not useful. The fifth and final step to prepare the data consisted of the imputation of missing data. The instances of missing NJASK data occurred because those students in the sample attended schools out of state at the time and therefore did not complete the NJASK. Instances of missing GPA data were the result of incomplete records in the cumulative academic folders from private middle schools. The following data were missing in the data set that remained in the model:

- GPA two years prior – 2 missing
- NJASK8 Math – 7 missing
- NJASK8 LAL – 7 missing

To impute missing data I used the missing values multiple imputation procedure in SPSS. All of the variables in the model were employed in the procedure and the number of imputations was set at five. This yielded five new versions of the data set with values for the missing cases of the independent variables. For the results of regression analyses using multiple imputation, I report pooled estimates of the regression coefficients. When these are reported in Chapter IV, the reader will notice that a range of R-squared values is noted in each regression table. This is because there is a different R-squared value for

each analysis of the imputed data sets. Therefore, I report the range for R-squared (minimum and maximum) in the regression analysis tables in Chapter IV.

Data Analysis. A statistical representation of the overall relationships among the control variables and the outcome variables was then created that allowed inferences about the relationship of intervention to outcome that was left over after all the relationships of the control variables to the outcome were accounted for (Rossi et al., 2004). Multivariate statistical models make assumptions about relationships among variables in a model (Rossi et al., 2004). The purpose of using a multivariate statistical model with quasi-experimental designs is "to configure a statistical model that accounts for the initial measured differences between the intervention and comparison groups and adjusts the outcome difference between those groups to subtract the portion attributable entirely to those initial differences" (Rossi et al., 2004, p. 323). Whatever difference remains is then attributable to the treatment, assuming there are not unmeasured differences between the groups that are not associated with measured covariates.

This study relied on a linear regression model to determine the extent to which a student's participation in the AVID elective class contributed to the variance in selected outcome variables after statistical controls for demographic and pre-test data were in place. The dependent variables in the regression analyses were strength of schedule, GPA, standardized test scores, attendance rates, PSAT registration, and PSAT scores. In the regressions, ethnicity, gender, free or reduced lunch status, prior GPA, and prior grade 8 Language Arts and Math NJASK data were used as control variables. ANOVA analysis was used to test for any differences between the treatment and comparison groups prior to the study. Those data were presented above in Table 2 and revealed no

statistically significant differences. The general model for all outcome variables in the study was:

$$\text{Outcome} = a + b_1\text{AVID} + b_2\text{Gender} + b_3\text{Ethnicity} + b_4\text{F/RLunch} + b_5\text{PriorYrGPA} + b_6\text{2YrPriorGPA} + b_7\text{NJASK8Math} + b_8\text{NJASK8LAL} + \text{Error}$$

Role of the Researcher

As the researcher for this study I should note that I am a practicing administrator at Fairview High School. One of my responsibilities is to serve as the Director of the AVID program. In fulfilling those responsibilities I am an active member of the site team discussed several times in this paper. It is possible that because of this some may perceive a conflict of interest. It should be noted that the intent of this study is not to "prove" anything about AVID at Fairview High School. Rather, as the research question implies, the intent is to discover the effects of AVID at Fairview High School – whether they meet the hopes of the AVID site team or fall short of those hopes.

This study is designed to be an integrated study of practice. My approach is to serve two distinct roles simultaneously. The first is my role as a researcher. In that role I leave any prior notions about AVID's impact aside and objectively focus on answering the research question given the data identified in the following chapter. My second role is as practitioner. In that role I have met and continue to meet approximately three times each month with the other members of the AVID site team to discuss a variety of issues associated with AVID's implementation at Fairview High School. In this latter role I am a member of team and neither make autonomous decisions regarding AVID's implementation nor make independent judgments about AVID's impact. Rather, the team collaborates and engages in professional discourse to ensure that AVID is

implemented with fidelity to the 11 essentials and to establish a collective understanding of what AVID student achievement data means. In this respect, collecting data, analyzing data, and structuring conversations around actionable insights is 'business as usual' at Fairview High School. The primary exceptions to this 'business as usual' understanding is that this study goes beyond what is typical data collection and analysis for practitioners by employing established research methodologies and sophisticated statistical analysis. Because of the complexity of the study design, data that was collected and analyzed by me in my role as researcher was transformed into more accessible descriptive statistics prior to being shared with the AVID site team.

CHAPTER IV

Findings

Table 4 presents descriptive data comparing the AVID students and the comparison students on outcome measures. Without controlling for any other variables or testing for statistical significance Table 4 shows that AVID students outperformed comparison students on several variables. AVID students on average enrolled in an overall more rigorous schedule with more rigorous courses being taken by AVID students in English, Social Studies, Math, and Science. Comparison students were slightly more likely than AVID students to take a rigorous elective course. Grade 11 AVID students scored better than comparison students on both the Math and Language Arts sections of the HSPA. AVID students also scored higher than comparison students on all sections of the PSAT. Comparison students outperformed AVID students in terms of their attendance accruing an average of 0.7 fewer absences during the 2012-2013 school year. Grade 9 and 10 comparison students performed slightly better than AVID students on their Math and Language Arts standardized tests.

TABLE 4

Descriptive Statistics Comparing Groups on Outcome Measures

		N	Mean	Std. Dev.
GPA	AVID	65	2.80	0.71
	Comparison	68	2.90	0.69
Strength of Schedule Overall	AVID	67	7.96	1.46
	Comparison	69	6.83	1.42
English Course Level	AVID	66	2.20	0.40
	Comparison	69	1.86	0.43
Social Studies Course Level	AVID	66	2.20	0.40
	Comparison	69	1.81	0.46
Math Course Level	AVID	66	1.76	0.53
	Comparison	69	1.48	0.53
Science Course Level	AVID	66	1.89	0.40
	Comparison	69	1.62	0.49
Elective Course Level	AVID	66	0.03	0.17
	Comparison	69	0.06	0.24
Attendance (Absences)	AVID	65	9.28	7.81
	Comparison	69	8.58	7.10
HSPA Math Grade 11	AVID	22	230.23	15.61
	Comparison	28	224.93	19.78
HSPA LAL Grade 11	AVID	22	241.86	7.96
	Comparison	28	235.75	15.34
PHA Math Grade 10	AVID	22	28.00	6.51
	Comparison	23	29.91	4.83
PHA LAL Grade 10	AVID	23	42.43	7.43
	Comparison	23	43.52	5.95
ACT Math Grade 9	AVID	20	17.00	2.00
	Comparison	17	17.06	1.68
ACT LAL Grade 9	AVID	20	15.15	2.11
	Comparison	17	15.76	1.89
PSAT Participation	AVID	46	0.74	0.44
	Comparison	52	0.35	0.48
PSAT Total	AVID	34	1256.18	201.04
	Comparison	18	1240.56	179.43
PSAT Reading	AVID	34	424.12	88.80
	Comparison	18	418.89	73.40
PSAT Writing	AVID	34	430.29	85.48
	Comparison	18	427.22	68.75
PSAT Math	AVID	34	401.76	57.29
	Comparison	18	394.44	79.57

Despite the encouraging picture presented in Table 4 regarding AVID's effect on the outcome measures in the study, a true estimate of AVID's impact must go beyond the descriptive statistics and be grounded in inferential statistics that control for other variables and indicate the level of significance of measurable effects. Table 5 presents a summary of AVID's effects with respect to the outcome measures in this study after statistical controls were included in the regression model described in the preceding chapter. Table 5 shows that AVID's estimated impact was statistically significant on 4 of 13 outcome measures. There was a statistically significant direct relationship between participation in AVID and the strength of a student's schedule, student performance on the grade 11 Language Arts section of the HSPA, and participation in the PSAT. There was a statistically significant inverse relationship between participation in AVID and GPA. The sections that follow present the regression summaries for each outcome variable in greater detail.

TABLE 5

Summary of AVID's Effect on Outcome Variables

	B	Effect Size	N
GPA	-0.183+	-0.261	133
Strength of Schedule	1.065**	0.689	136
Attendance (Absences)	0.980	0.132	134
HSPA Math (Grade 11)	-0.439	-0.024	50
HSPA LAL (Grade 11)	7.191+	0.558	50
PHA Math (Grade 10)	-1.326	-0.231	45
PHA LAL (Grade 10)	-1.155	-0.173	46
ACT Math (Grade 9)	-0.386	-0.211	37
ACT LAL (Grade9)	-0.318	-0.158	37
Standardized Score Math (Grades 9-11)	-0.059	-0.060	136
Standardized Score LAL (Grades 9-11)	-0.025	-0.025	136
PSAT Participation (Grades 10 & 11)	0.383**	0.763	98
PSAT Scores (Grades 10 & 11)	-4.149	-0.022	52

NOTE: + Significant at the .10 level
* Significant at the .05 level
**Significant at the .01 level

Finding 1: Strength of Schedule

Table 6 shows that the difference in the strength of student schedules between those in AVID and those in the comparison group was statistically significant with a p value of less than .001. The B of 1.065 indicates that it is estimated with statistical confidence that AVID students enrolled in a more rigorous course of study than comparison students after controlling for the independent variables in the model. The effect size of 0.689 indicates that not only was a student's participation in AVID significant in terms of its predictive value of a student's strength of schedule but that the size of the effect was relatively large.

TABLE 6

Strength of Schedule Regression Summary

Strength of Schedule	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	1.065	0.226	4.711	0.000	0.689
Gender	-0.309	0.234	-1.320	0.187	-0.200
Ethnicity	0.374	0.262	1.430	0.153	0.242
Free or Reduced Lunch	-0.511	0.281	-1.818	0.069	-0.331
GPA Year Prior	0.116	0.220	0.526	0.599	0.075
GPA 2 Years Prior	1.016	0.265	3.828	0.000	0.658
NJASK8 Math	0.014	0.005	2.752	0.006	0.009
NJASK8 LAL	0.007	0.008	0.884	0.377	0.005

Notes: R^2 = (.371 - .390), n=136

Finding 2: GPA

Table 7 shows that there was a statistically significant inverse relationship between participation in AVID and GPA. This relationship is certainly not an intended effect of AVID and its implications are discussed in the next chapter. Gender and the prior year GPA were also significantly related to student GPA.

TABLE 7

GPA Regression Summary

GPA	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	-0.183	0.099	-1.841	0.066	-0.261
Gender	-0.259	0.105	-2.475	0.013	-0.369
Ethnicity	-0.115	0.116	-0.986	0.324	-0.164
Free or Reduced Lunch	0.072	0.125	0.578	0.563	0.103
GPA Year Prior	0.585	0.095	6.132	0.000	0.833
GPA 2 Years Prior	0.185	0.117	0.159	0.113	0.264
NJASK8 Math	0.004	0.002	1.568	0.117	0.006
NJASK8 LAL	0.006	0.003	1.660	0.097	0.009

Notes: R^2 = (.417-.426), n=133

Finding 3: Attendance

The analysis revealed no statistically significant relationship between a student's participation in AVID and the number of days a student was absent from school in the 2012-2013 school year. A variable in the model that was a significant predictor of student attendance was student GPA the year prior to the study. There was an inverse relationship between student GPAs the year prior to the study and the number of absences a student accrued the subsequent school year. Also significant (at a p value of less than 0.10) was whether or not a student was on free or reduced price lunch. Students on free or reduced price lunch were absent nearly three days more than their peers after controlling for the other variables in the model.

TABLE 8

Attendance Regression Summary

Attendance (Absences)	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	0.980	1.307	0.750	0.453	0.132
Gender	-1.857	1.379	-1.346	0.178	-0.250
Ethnicity	-1.474	1.537	-0.959	0.338	-0.198
Free or Reduced Lunch	2.811	1.650	1.704	0.088	0.378
GPA Year Prior	-3.224	1.266	-2.546	0.011	-0.434
GPA 2 Years Prior	-0.204	1.536	-0.133	0.895	-0.027
NJASK8 Math	0.010	0.030	0.319	0.750	0.001
NJASK8 LAL	0.016	0.044	0.361	0.718	0.002

Notes: R^2 = (.086-.090), n=134

Finding 4: Standardized Test Scores

Each of the three grade levels that had an AVID elective class in the 2012-2013 school year completed standardized assessments in Math and Language Arts. Because each of the grade levels completed a unique standardized assessment, the Math and

Language Arts assessment data was initially analyzed separately for each grade level for this study and was later transformed to z scores so that the data could be pooled together in a single analysis.

Grade 11 HSPA. Grade 11 students completed the New Jersey High School Proficiency Assessment (HSPA) in Math and Language Arts. The regression data demonstrates that there was not a significant difference in the performance of AVID students and the comparison students on the Math section of the HSPA. A significant predictor of grade 11 HSPA Math performance in the model was grade eight NJASK Math performance. Also significant (at a p value of less than 0.10) was the relationship between gender and Math HSPA performance. Male students performed significantly better than female students in the sample with an effect size of 0.425.

TABLE 9

Math HSPA Regression Summary

HSPA Math (Grade 11)	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	-0.439	5.084	-0.086	0.931	-0.024
Gender	7.685	4.466	1.721	0.085	0.425
Ethnicity	2.185	5.711	3.830	0.702	0.121
Free or Reduced Lunch	-1.068	6.102	-0.175	0.861	-0.059
GPA Year Prior	6.732	6.249	1.077	0.282	0.372
GPA 2 Years Prior	-1.599	7.756	-0.206	0.838	-0.088
NJASK8 Math	0.307	0.101	3.051	0.003	0.017
NJASK8 LAL	0.239	0.168	1.421	0.167	0.013

Notes: R^2 = (.470-.567), n=50

With respect to the analysis of the Language Arts HSPA data Table 10 below demonstrates that there was a significant difference (at a p value of less than 0.10) in the performance of AVID students and the comparison students on the Language Arts section

of the HSPA. The effect size of this difference demonstrates that AVID students outperformed comparison students by just over one half of a standard deviation. Other significant predictors of grade 11 HSPA Language Arts performance in the model were grade eight NJASK Language Arts performance (at a p value of less than 0.10) and whether or not a student was on free or reduced lunch. Regarding the latter, students on free or reduced lunch scored lower than their peers with an effect size of 0.835 indicating a large effect.

TABLE 10

Language Arts HSPA Regression Summary

HSPA LAL (Grade 11)	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	7.191	3.713	1.937	0.053	0.558
Gender	-0.935	3.494	-0.268	0.789	-0.073
Ethnicity	2.962	4.311	0.687	0.492	0.230
Free or Reduced Lunch	-10.768	4.768	-2.258	0.024	-0.835
GPA Year Prior	-2.127	4.774	-0.446	0.656	-0.165
GPA 2 Years Prior	-1.427	4.989	-0.286	0.775	-0.111
NJASK8 Math	0.077	0.073	1.062	0.288	0.006
NJASK8 LAL	0.179	0.105	1.716	0.086	0.014

Notes: R^2 = (.382-.441), n=50

Grade 10 Local Standardized Assessment (PHA). Grade 10 students at FHS completed the local Pre-HSPA Assessment (PHA) in Math and Language Arts. Table 11 shows the results of the regression for the Math PHA. Participation in AVID was not a significant predictor of student performance on the Math PHA. The only significant predictor of Math PHA performance in the model was the grade eight NJASK Math score. Grade eight NJASK Math was highly significant as a predictor however the effect size was practically meaningless.

TABLE 11

PHA Math Regression Summary

PHA Math (Grade 10)	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	-1.326	1.466	-0.904	0.368	-0.231
Gender	0.603	1.714	0.352	0.725	0.105
Ethnicity	-0.061	1.563	-0.039	0.969	-0.011
Free or Reduced Lunch	-0.455	1.783	-0.255	0.799	-0.079
GPA Year Prior	-0.976	1.425	-0.685	0.496	-0.170
GPA 2 Years Prior	0.988	1.813	0.545	0.587	0.172
NJASK8 Math	0.169	0.042	4.026	0.000	0.029
NJASK8 LAL	0.005	0.044	0.125	0.900	0.001

Notes: R^2 = (.470-.644), n=45

Table 12 shows that participation in AVID was not a significant predictor of student performance on the LAL PHA. The only significant predictor of LAL PHA performance in the model was the grade eight NJASK LAL score. Like the relationship with grade eight NJASK Math and grade 10 PHA Math described above, despite the statistically significant relationship the effect size of 0.027 makes this relationship practically meaningless.

TABLE 12

PHA LAL Regression Summary

PHA LAL (Grade 10)	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	-1.155	1.851	-0.624	0.533	-0.173
Gender	2.931	2.207	1.328	0.184	0.439
Ethnicity	-2.985	2.118	-1.409	0.159	-0.447
Free or Reduced Lunch	-0.249	2.355	-0.106	0.916	-0.037
GPA Year Prior	-1.386	1.746	-0.794	0.428	-0.208
GPA 2 Years Prior	1.069	2.270	0.471	0.638	0.160
NJASK8 Math	0.045	0.048	0.934	0.351	0.007
NJASK8 LAL	0.181	0.059	3.045	0.002	0.027

Notes: R^2 = (.371-.420), n=46

Grade 9 ACT. The grade nine students took the ACT Explore assessment in Math and Language Arts. Table 13 shows that regarding the Math assessment, the difference between AVID and comparison student scores was not significant. Once again the only significant predictor of student performance on the Math standardized assessment was the grade eight NJASK Math standardized assessment that students completed approximately one year prior to the ACT.

TABLE 13

Math ACT Regression Summary

ACT Math (Grade 9)	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	-0.386	0.533	-0.724	0.469	-0.211
Gender	-0.013	0.579	-0.023	0.982	-0.007
Ethnicity	-0.472	0.679	-0.695	0.487	-0.258
Free or Reduced Lunch	-0.715	0.643	-1.113	0.266	-0.390
GPA Year Prior	-0.379	0.719	-0.528	0.598	-0.207
GPA 2 Years Prior	-0.067	0.791	-0.084	0.933	-0.037
NJASK8 Math	0.060	0.015	3.982	0.000	0.033
NJASK8 LAL	-0.030	0.023	-1.288	0.198	-0.016

Notes: R^2 = .472, n=37

With respect to grade nine student performance on the ACT Language Arts assessment, Table 14 shows that the relationship between a student's participation in the AVID program and their performance on the ACT grade nine assessment was not significant. There were no significant predictors of grade nine LAL performance in the model. That the grade eight NJASK LAL assessment was not a significant predictor of the grade nine ACT Language Arts assessment is interesting and is revisited in chapter 5.

TABLE 14

LAL ACT Regression Summary

ACT LAL (Grade9)	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	-0.318	0.739	-0.430	0.667	-0.158
Gender	0.383	0.803	0.477	0.633	0.191
Ethnicity	-0.966	0.942	-1.025	0.305	-0.481
Free or Reduced Lunch	-0.280	0.891	-0.315	0.753	-0.140
GPA Year Prior	0.767	0.997	0.769	0.442	0.382
GPA 2 Years Prior	0.965	1.097	0.880	0.379	0.481
NJASK8 Math	0.009	0.021	0.419	0.675	0.004
NJASK8 LAL	-0.013	0.032	-0.406	0.685	-0.006

Notes: R^2 = .154, n=37

Grade 9-11 Standardized Test Scores Using Z Score. An alternative means of estimating AVID's effect on student performance on Math and Language Arts test scores was to standardized the student scores from the grade level specific assessments using the z-score calculation tool in SPSS to transform raw scores based on a mean of 0 and a standard deviation of 1. Table 15 shows the regression results for the Math standardized test scores using the z scores for grades 9-11. There was no statistically significant relationship between AVID and the Math standardized test scores for grades 9-11. The NJASK grade eight Math scores were significant predictors of grade 9-11 standardized test performance in Math although the effect size of 0.025 indicates a practically meaningless effect.

TABLE 15

Standardized Math Score Grades 9-11 Regression Summary

Standardized Score Math (Grades 9-11)	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	-0.059	0.142	-0.416	0.678	-0.060
Gender	0.205	0.144	1.430	0.153	0.210
Ethnicity	-0.080	0.159	-0.500	0.617	-0.082
Free or Reduced Lunch	-0.161	0.175	-0.919	0.358	-0.165
GPA Year Prior	-0.133	0.134	-0.989	0.323	-0.136
GPA 2 Years Prior	0.102	0.175	0.585	0.559	0.104
NJASK8 Math	0.024	0.003	7.314	0.000	0.025
NJASK8 LAL	0.002	0.005	0.329	0.743	0.002

Notes: R^2 = (.390-.472), n=136

Table 16 shows that there was not a statistically significant relationship between participation in AVID and the grade 9-11 standardized test score in Language Arts. The only significant predictor was the grade eight NJASK LAL score with a very small effect.

TABLE 16

Standardized LAL Score Grades 9-11 Regression Summary

Standardized Score LAL (Grades 9-11)	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	-0.025	0.159	-0.156	0.876	-0.025
Gender	0.203	0.168	1.214	0.225	0.207
Ethnicity	-0.294	0.186	-1.583	0.113	-0.300
Free or Reduced Lunch	-0.170	0.200	-8.480	0.397	-0.173
GPA Year Prior	0.006	0.155	0.041	0.968	0.006
GPA 2 Years Prior	0.170	0.190	0.892	0.372	0.173
NJASK8 Math	0.006	0.004	1.599	0.110	0.006
NJASK8 LAL	0.016	0.005	3.009	0.003	0.016

Notes: R^2 = (.214-.243), n=136

Finding 5: PSAT Participation

The data presented in Table 17 are based on only the grade 10 and 11 students in the sample as they are the two grades that would typically register for and take the PSAT exam. The initial statistical analysis on PSAT registration was run using a logistic regression, however the results of that analysis were nearly identical to the results obtained using the linear probability regression model that was applied to all other outcome variables in the study. For consistency in reporting the outcome measures the results of the linear probability model are presented here.

Table 17 demonstrates that there was a statistically significant relationship between participation in AVID and registering for and taking the PSAT exam. This effect was highly significant and the effect size of 0.763 indicates a large effect. Essentially, AVID students were 38.3% more likely to register for and take the PSAT exam than comparison students after controlling for the other independent variables in the model.

TABLE 17

PSAT Participation Regression Summary

PSAT Participation (Grades 10 & 11)	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	0.383	0.101	3.801	0.000	0.763
Gender	-0.086	0.101	-8.480	0.396	-0.171
Ethnicity	-0.101	0.115	-0.879	0.380	-0.201
Free or Reduced Lunch	-0.093	0.124	-0.747	0.455	-0.185
GPA Year Prior	-0.043	0.085	-0.500	0.617	-0.086
GPA 2 Years Prior	0.313	0.118	2.660	0.008	0.624
NJASK8 Math	-0.002	0.002	-7.170	0.474	-0.004
NJASK8 LAL	-0.001	0.003	-0.300	0.764	-0.002

Notes: R^2 = (.231-.265), n=98

Finding 6: PSAT Score

Table 18 shows that there was no statistically significant relationship between participation in AVID and PSAT Score. Grade eight NJASK Math and Language Arts scores were significant predictors with relatively small effect sizes.

TABLE18

PSAT Score Regression Summary

PSAT Scores (Grades 10 & 11)	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	-4.149	39.853	-0.104	0.917	-0.022
Gender	-41.384	40.417	-1.024	0.306	-0.215
Ethnicity	22.008	45.190	0.487	0.626	0.115
Free or Reduced Lunch	-33.177	48.079	-0.690	0.490	-0.173
GPA Year Prior	-29.808	38.661	-77.100	0.441	-0.155
GPA 2 Years Prior	122.994	49.364	2.492	0.014	0.640
NJASK8 Math	2.550	1.013	2.517	0.015	0.013
NJASK8 LAL	5.385	1.354	3.977	0.000	0.028

Notes: R^2 = (.542-.697), n=52

Summary of Findings

The results of this study assert that AVID's estimated impact was statistically significant on 4 of 13 outcome measures. There was a statistically significant direct relationship between participation in AVID and the strength of a student's schedule, student performance on the grade 11 Language Arts section of the HSPA, and participation in the PSAT. There was a statistically significant inverse relationship between participation in AVID and GPA.

In the interest of checking for the potential unintended influence on the results of the study based on the construction of the model I attempted to reduce the model and see if the results of the analyses would be different with reduced versions of the model. I

reduced the model by eliminating imputations to investigate potential effects of the imputation of missing data. On account of the multicolinearity amongst independent variables in the study I also reduced the model by including only statistically significant independent variables. Those analyses produced nothing substantively different than the results of the analyses presented above therefore the most complete model was maintained.

CHAPTER V

Conclusion

The findings of this study have implications for the AVID site team at Fairview High School and for current and prospective AVID schools in general. This study demonstrates that AVID did not produce the effects expected at Fairview High School. A program that advertises itself as one that will close the achievement gap and produce students that are college ready and prepared for success in a global society (AVID, n.d.) ought to produce statistically significant positive results on multiple measures when implemented with fidelity. That this was not the case on the measures included in this study suggests that AVID is not working as advertised; however, some of the context provided in this chapter arguably has a moderating effect on that suggestion.

The first critical set of findings are the four outcomes for which there were statistically significant effects associated with participation in AVID. With respect to these it is critical for the site team at Fairview High School to understand and interpret these results for practical implications. The second critical set of findings are those for which no statistically significant impact associated with participation in the AVID program was measured. Some of the findings of this study contradict prior research that has resulted in findings more favorable to AVID. In addition to these findings, the results of this study raise several questions related to AVID's implementation and impact at Fairview High School that have implications for how the site team might study AVID in the future. The implications of the findings are discussed below.

Strength of Schedule

That AVID students are enrolling in more academically rigorous courses is an encouraging finding for the AVID site team at Fairview High School. The implementation guide that all AVID schools must follow (the CSS) includes language in its Essential Four stating the expectation that AVID students should be "enrolled in a rigorous course of study that will enable them to meet the requirements of university enrollment" (AVID, 2011, p. 9). The CSS has various indicators beneath that Essential that encourage schools to promote AVID student enrollment in "the most rigorous academic courses, appropriate to the student, available at the school" (p. 10). Courses include Honors, Advanced Placement (AP), and Dual Enrollment courses, but also include any higher track course that does not rise to the level of these three. In light of the CSS Essential Four requirements, the strength of AVID student schedules is both a measure of implementation and an outcome measure. In terms of implementation the findings of this study suggest that AVID is being implemented with high fidelity to the CSS Essential Four at Fairview High School. In terms of the strength of schedule being a measurable outcome, the findings of this study suggest that AVID students are taking on the challenges of more rigorous courses and the effect is both large and meaningful.

GPA

The findings of this study estimate that AVID students are earning poorer grades than comparison students after controlling for the other independent variables in the study. The size of the effect is small, but not without practical meaning. The site team at Fairview High School certainly expects that AVID students would be outperforming comparison students – not the opposite which was found in this study. Though this

finding is a cause for concern for the AVID site team, there is less concern than initially meets the eye. Placing the GPA finding in the context of the strength of schedule finding creates a more complete picture. With an effect size of 0.689 AVID students enrolled in more rigorous courses than comparison students. The effect size of the lower GPA for AVID students was -0.261. This combination of findings suggests that AVID students may be earning slightly lower grades than comparison students on account of the fact that they are enrolled in significantly more rigorous courses and that rigor is not reflected in the GPA. The conservative inference may be that the combination of these findings nets essentially no effect because though AVID students are taking more challenging courses, they are not rising to the challenge and performing well in those courses. A more liberal, and I argue, more accurate interpretation, is that there is a modest positive net effect in these two findings that suggests that if AVID students were enrolled in the same level of rigor as comparison students they would be performing at least as well as comparison students; or, if comparison students were enrolled in the same level of rigor as AVID students they would be performing more poorly than AVID students. Both of these inferences are conjecture, and not presented here as a finding; rather, they represent interpretations of the meaning of these results that the Fairview High School site team must struggle with as they determine what, if any, actions will follow from the findings of this study.

Grade 11 HSPA Language Arts

The findings of this study estimate that grade 11 AVID students outperformed comparison students on the Language Arts section of the HSPA state assessment. This finding is of interest to the site team at Fairview High School primarily because it is

another outcome measure that indicates that AVID students are outperforming comparison students on a measure associated with AVID's implementation essentials. AVID's CSS Essential Five dictates that a strong, relevant writing and reading curriculum provide a basis for instruction in the AVID classroom (AVID, 2011). It is expected that schools implementing AVID with fidelity are ensuring that AVID students receive instruction in writing and reading at least weekly and that writing and reading are part of the grade earned for AVID students (AVID, 2011). This writing and reading instruction that occurs in the AVID classroom by design has the potential to be a powerful support to the writing and reading traditionally concentrated in the English class. Because of this programmatic design, it would be expected that AVID students would gain from this instruction and that those gains would be measurable on assessments. That grade 11 AVID students outperformed the comparison group on the HSPA Language Arts section indicates faithful implementation of Essential Five at Fairview High School.

A related concern is that no statistically significant effect was found with respect to the grade 9 and grade 10 standardized tests in Language Arts. Correlations show that as expected the grade 10 and 11 Language Arts assessment scores are correlated with the NJASK grade 8 Language Arts scores. However, the grade 9 Language Arts score shows essentially no correlation at all with the grade 8 NJASK score. This suggests that the grade 9 ACT Language Arts assessment tests something very different than the grade 8, 10, and 11 Language Arts assessments. This is not that surprising considering that the grade 8 and 11 assessments are New Jersey state assessments and the grade 10 assessment is a locally created assessment designed to simulate the state assessment. It is

to be expected that these three assessments would be at least moderately correlated. The grade 9 ACT is a national assessment not specifically designed to measure attainment of New Jersey Core Curriculum Content Standards and thus it is unsurprising in this respect that this assessment may be measuring something different than the others. Table 19 shows that there was no correlation at all between the grade 9 ACT Language Arts Scores and the grade 8 NJASK Language Arts scores. As points of contrast, the same correlation for the grade 10 PHA Language Arts scores was measured at .486 with a p value of .001 and the same correlation for the grade 11 HSPA scores was measured at .558 with a p value of less than .001.

TABLE 19

LAL Assessment Correlations Grade 9

		T/C	Gen	Eth	F/R	GPA Yr. Prior	GPA 2Yr. Prior	NJASK8L	12-13 LAL
T/C	Pearson Correlation	1	.112	.031	-.042	-.243	-.241	-.042	-.155
Gen	Pearson Correlation	.112	1	-.096	-.218	-.114	-.170	-.178	.115
Eth	Pearson Correlation	.031	-.096	1	.510**	.111	.514**	.163	-.167
F/R	Pearson Correlation	-.042	-.218	.510**	1	.174	.417**	-.140	-.080
GPA Yr. Prior	Pearson Correlation	-.243	-.114	.111	.174	1	.494**	.178	.236
GPA 2Yr. Prior	Pearson Correlation	-.241	-.170	.514**	.417**	.494**	1	.187	.143
NJASK8L	Pearson Correlation	-.042	-.178	.163	-.140	.178	.187	1	-.045
12-13 LAL	Pearson Correlation	-.155	.115	-.167	-.080	.236	.143	-.045	1

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).

The implication of this for the site team at Fairview High School is two-fold. First, there is enough in the findings to be encouraged about AVID's effect on writing and reading skills. Second, there is enough ambiguity in the data to warrant caution about the meaning of the findings. This is an area that should be followed in subsequent years to see if the relationships are a trend in the data or if subsequent years yield different relationships and lead to different conclusions.

PSAT Participation

The findings of this study estimated that AVID students were far more likely than comparison students to participate in PSAT testing in grade 10 or 11. This finding was both highly significant (p value of less than .001) and very meaningful (effect size of .763). The implication of this finding for the site team at Fairview High School is that the students in the AVID program are engaging in behaviors outside of the classroom that indicate a college-going focus. Essential Four in the AVID CSS highlights a target indicator of 100% participation "in appropriate college testing in the past year (e.g. SAT, ACT, PLAN, EXPLORE, PSAT)" (AVID, 2011, p. 10). Though this target was unmet in the 2012-2013 school year at Fairview High School, AVID students were 38.3% more likely than comparison students to participate in PSAT testing. This finding presents further evidence to suggest that Fairview High School is implementing CSS Essential Four with high fidelity. The site team at Fairview High School ought to discuss what specific implementation steps have contributed to this result and what, if any, changes ought to be made for subsequent years to reproduce and enhance the effect.

Outcomes Without Measured Effects

Nine of the 13 outcomes measured in this study showed no statistically significant effect attributable to participation in AVID, and that information has practical implications for the site team at Fairview High School. On the remaining outcomes, the site team would prefer statistically significant direct relationships between participation in AVID and student attendance, standardized test scores in Math for all grade levels, standardized test scores in Language Arts for grades 9 and 10, and PSAT scores. That those relationships were not found in this study indicates that AVID has no effect on these measures at all at Fairview High School at its current level of implementation.

The lack of a statistically significant effect on the nine variables noted above has practical value to the site team because the site team is compelled to implement Essential Nine of the AVID CSS which focuses on site team data collection and analysis to inform its decision making (AVID, 2011). The site team is expected to use data analysis to revise "site team, school, and/or district plans in order to promote access to, support and success in rigorous advanced courses" (p. 20). The site team is also compelled to "present evidence that standardized test data is analyzed to inform instruction" (p. 20). The very fact that no measurable effects were found on these variables is enough to begin a conversation that forces the site team to look at the data through different lenses and examine the instructional practices in the classrooms that may be related to these outcomes.

In addition to the implementation value, the fact that there was not a statistically significant effect on nine variables measured for this study also has practical value regarding the site team's expectations for AVID at Fairview High School. As is noted in

Chapter I, AVID was brought to Fairview High School to help narrow or close performance gaps. That there was no measured difference between AVID students and comparison students on nine variables in this study ought to stimulate conversation amongst the site team members regarding the return on their investment. The sections that follow provide specific suggestions for the site team as well as additional context through which to interpret and make meaning of the results of this study.

Specifically, AVID requires site teams to submit annual site team action plans. These action plans require site teams to identify at least two specific action plans aligned to specific goals related to the AVID essentials. Based on the findings of this study it is recommended that the site team at Fairview High School focus on student organization and study skills as well as creating institutional supports for math.

That AVID students earned GPAs lower than comparison students may suggest inadequacies related to student organization and study skills. The Fairview High School AVID site team ought to create an action plan designed to ensure that students are taking quality Cornell notes as is required by Essential Five in the AVID CSS. The CSS document states that when AVID is institutionalized AVID students "take and use Cornell notes and have integrated the development of effective note-taking skills for understanding rigorous content and preparing for tests in all core academic subject areas" (AVID, 2011). As the CSS implies, the AVID model assumes that effective use of Cornell notes will result in higher student performances on tests in their core academic classes. If this effect occurs, it would likely produce gains measured by increases in student GPAs.

In my role of practitioner I have observed anecdotally that the Cornell note-taking process forces students to not only take notes, but to process those notes through marking the notes, chunking the notes, extrapolating main ideas and key questions, writing summaries, and revisiting the notes repeatedly in fixed time intervals. In my observations of AVID classrooms it has not been my general impression that Cornell notes are being implemented correctly and used in the manner described above by students. Thus, my recommendation for the AVID site team to focus on Cornell notes in the future is driven in part by my role as practitioner, and in part by my role as researcher, the data collected in this study, and my understanding that a more scientifically credible approach to studying the implementation of Cornell notes at Fairview High School would likely conclude as I speculate – that they are not being implemented correctly.

This study demonstrated that there was not a statistically significant relationship between participation in the AVID program on student performance on standardized test scores in math. The AVID site team at Fairview High School ought to create an action plan aimed at improving student competencies in tested mathematical skills. Essential Eight of the CSS requires that AVID students participate in bi-weekly tutorial sessions. The CSS states that AVID students should base their tutorial questions on their academic performance in all core subject areas (AVID, 2011). It may be that AVID students have not been appropriately trained in the skills needed to identify their weaknesses in math, create questions based on those needs, and seek and receive corresponding help from peers and trained tutors during tutorial sessions. The site team should create a plan to address these areas and aim to strengthen student skills in engaging math challenges during tutorial, and ultimately aimed to strengthen tested math skills.

Once again building on my experience as a practitioner at Fairview High School, it has been my observation that AVID students tend to struggle with math more than they struggle with the other core academic subjects. I have anecdotally observed AVID students attempting to solve math problems during tutorials; however, it has not been my impression that they have acquired strong skills in terms of finding and presenting their points of confusion so that their tutorial groups can help them accordingly. As is the case with my comments above on Cornell notes, I speculate that a less anecdotal and more scientifically credible qualitative approach to studying student use of math questions during tutorial would yield conclusions similar to my comments here.

Findings in Context

Though the sample size for this study is relatively small, the study does provide a methodological example of how a larger longitudinal study of AVID's effects may be designed. In this respect this study presents a model of using an appropriately constructed comparison group and inferential statistical analysis that controls for pre-existing differences amongst the groups as well as tests for AVID's measured effect with accepted levels of statistical significance. Though I would not argue that anything conclusive about AVID in general can be drawn from this study alone, the findings do suggest that AVID has the power to meaningfully influence course taking patterns, reading and writing skills, and college-ready behaviors such as participation in college preparatory testing. In addition, the findings suggest that AVID may have an adverse effect on student GPA, a null effect on attendance, and a null effect on math scores.

Rigor of Courses. With respect to the existing literature on AVID's effects, some findings of this study are consistent with findings elsewhere in the body of research

while others stand in contrast. This study found a positive relationship between participation in AVID and the overall rigor of a student's schedule. This finding is consistent with much of the prior research on AVID that demonstrated a positive relationship between participation in AVID and student enrollment in more rigorous coursework (Watt et al., 2004; Watt et al., 2006; Watt et al., 2007; Mendiola et al., 2010); however in each case only student registration in Advanced Placement (AP) courses was used as a measure of academic rigor. Moreover, prior research has not demonstrated statistically significant links between AVID and rigorous coursework. For example, Watt et al. (2004) reported only the percentage of AVID students in the study that were enrolled in AP courses over a three year period without any statistical controls or tests of significance. Other studies using schools as the unit of analysis compared advanced course enrollment in schools with AVID programs with advanced course enrollment in similar schools without AVID programs (Watt et al., 2006). Data showed a trend toward increasing advanced course enrollment in AVID schools and a trend in the opposite direction in non-AVID schools (Watt et al., 2006). However, once again the study did not statistically control for related variables or test for significance. Moreover, because entire schools were the unit of analysis researchers could only speculate that increases "may be reflective of increased participation of AVID students in advanced courses, the increased availability of advanced courses on AVID campuses, or both" (Watt et al., 2006, p. 68). Other research relied on transcript data from a sample of 42 AVID graduates to determine that AVID graduates earned an average of two to three AP course credits while in high school (Mendiola et al., 2010). Again, no statistical controls or tests of significance were utilized. Thus, though the finding of the current study is consistent

with prior research, the current study employed more rigorous statistical tests than prior research and therefore serves to both buttress and validate the conclusions of prior researchers. In addition, the current study measured the *overall* rigor of a student's coursework, not just the number of advanced courses, and thus contributes a finding to the body of research that goes beyond that research by including a more comprehensive indicator of rigorous coursework.

GPA. This study found an inverse relationship between participation in AVID and a student's GPA. Prior research on AVID has yielded inconsistent findings with some studies indicating different relationships between AVID and GPA based on demographic characteristics of students (Guthrie & Guthrie, 2000; Black et al., 2008), different relationships between AVID and GPA based on different subjects (Watt et al., 2002-2003) and different relationships for different cohorts of AVID students within a school (Black et al., 2008). The findings of this study are most consistent with the findings of Watt et al. (2002-2003) who compared AVID students in the spring term with the same AVID students in the preceding fall term. In that study researchers found that AVID students experienced a slight drop in grades for science and social studies and a slight increase in grades for English and math (Watt et al., 2002-2003). Neither the decrease nor the increase in AVID student grade performance was significant, however the researchers noted that AVID students in the study were enrolled in more rigorous courses – as they were in the current study. Other research has employed quasi-experimental design to compare AVID students with a comparison group of non-AVID students in a different school (Black et al., 2008). Researchers found that AVID students' grades increased over the course of the study whereas comparison students

decreased over the same time period (Black et al., 2008). Student grades for the study were self-reported and the finding was statistically significant (Black et al., 2008). The current study stands in contradiction to this finding as AVID students in the current study earned grades lower than comparison students. However, the current study used a comparison group of non-AVID students within the same school, not from a different school as was the case with the research of Black et al., (2008). This difference may be meaningful in that students in AVID schools may be benefiting from an "AVID effect" on teaching and learning school wide that would be missing in non-AVID schools. In addition, as is the case in the current study, the comparison group of students in the same school is more likely to have a similar experience to AVID students (all else equal) in that they are learning the same curriculum taught by (in many cases) the same teachers employing similar resources, strategies, assessments, and grading systems. Other research that looked at high school AVID student GPAs found no statistically significant differences in student GPAs between AVID and comparison students that did not enroll in AVID (Guthrie & Guthrie, 2000).

When considered along with the prior research on AVID, the findings of the current study with respect to AVID's impact on student GPA appears to present valid evidence to suggest that AVID is not associated with increased academic performance as measured by student GPA. However, it should be noted that as Table 5 indicates, the GPA finding is noted as significant with a p value of less than .10, not .05 which is the more typical standard for reporting statistically significant findings. Table 7 indicates that the actual p value of the GPA finding for this study was .066. To further investigate the significance of the GPA finding I reduced the standard model applied to all outcome

variables in the study by eliminating independent variables that were not statistically significant in the standard model. What remained in the model is presented in Table 20. This table demonstrates that even after removing the ethnicity, free or reduced lunch status, and two year prior GPA variables from the model, AVID's estimated impact on student GPA was still only significant at a p value of less than .10 (.067). If the p value were below .05 I would feel comfortable asserting that this study presents strong evidence that AVID may be associated with a decrease in student performance as measured by GPA; however, because even the reduced model does not meet the standard of a p value of less than .05 then the more prudent conclusion to reach is that the actual effect measured in this study may be a null effect, though, as is stated above, in the context of the statistically strong and unequivocal effect on the strength of student schedules even the null effect interpretation of the GPA finding could be considered a net positive.

TABLE 20

GPA, Reduced Model

GPA	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	-0.180	0.098	-1.835	0.067	-0.256
Gender	-0.263	0.101	-2.598	0.009	-0.374
GPA Year Prior	0.636	0.091	6.991	0.000	0.907
NJASK8 Math	0.004	0.002	1.915	0.056	0.006
NJASK8 LAL	0.005	0.003	1.702	0.089	0.008

Notes: R^2 = (.401-.408), n=133

The trend in the GPA data from middle school to high school for all students in the study provides additional context to comprehensively interpret the measurements in this study. Table 21 shows that for both AVID and comparison students in the study

there is at least the initial sign of a trend toward a meaningful drop in GPA the year that students begin the AVID program. As a practitioner familiar with the transition from middle school to high school I speculate that this is more about a general increase in rigor as students move from middle school (prior year GPAs) to high school than it is about the AVID program in particular. School wide GPA data was unavailable to confirm whether or not this trend is evident across the entire student body at Fairview High School.

Assuming that my speculation is accurate, it might be the case that AVID has a relatively more challenging task in terms of raising student GPAs at Fairview High School than it does at other schools that have been studied. It may be the case that Fairview High School is a challenging academic environment in general, and therefore for an academic intervention to have a significant effect on GPA is asking more than it would be if, for example, the general environment at Fairview High School was not academically rigorous. If the latter was the case then an intervention like AVID might be more likely to produce measurable effects.

TABLE 21

FHS GPA TREND

	AVID	Comparison
GPA One Year Prior	3.38	3.26
GPA Two Years Prior	3.59	3.51
GPA 2012-2013	2.80	2.90

Language Arts Standardized Assessments. This study found a positive relationship between participation in AVID and grade 11 performance on the language arts section of the state assessment. This finding is consistent with prior research on AVID that has indicated positive relationships between participation in AVID and a

variety of state assessments (Black et al., 2008; Lozano et al., 2009; Watt et al., 2006; Watt et al., 2004; Watt et al., 2002-2003). Examining AVID student growth on standardized assessments in reading, prior research demonstrated that AVID students increased their scores over a three year period by seven percentage points; however, no statistical controls were employed and each year involved a unique reading assessment (Watt et al., 2002-2003). Another study found that there was a statistically significant difference between AVID and comparison student scores in a state writing assessment in one cohort of students, but not in another (Black et al., 2008). For the cohort for which there was a statistically significant effect, AVID students performed better than comparison students by more than 0.5 standard deviations (Black et al., 2008). Without tests of statistical significance, other research has concluded that on average AVID students outscored their classmates on a state assessment in reading (Watt et al., 2004) while yet other research without statistical controls found that a comparison group of non-AVID students outperformed AVID students on an English standardized assessment (Lozano et al., 2009).

This study contributes to the body of research by lending further credibility to the claim that participation in AVID is likely to help students perform better on state assessments in language arts. However, it must be acknowledged that this study did not find statistically significant relationships for the grade 9 and 10 assessments in language arts. Furthermore, there are inconsistencies in the prior research and some of the claims in the current research that estimate a positive effect between AVID students and language arts state assessments are grounded in dubious methods.

Additionally, as with the GPA finding in this study, the finding of AVID's effect on grade 11 LAL scores is reported in Table 5 as significant with a p value of less than .10. The actual p value reported in Table 10 is .053. Though this approaches the typical standard of .05, because it did not meet that standard I reduced the standard model applied to the outcome variables in this study by eliminating independent variables that were not statistically significant. That reduced model is presented below in Table 22. The reduced model resulted in a p value that increased to .076 thus raising the question of whether or not the finding ought to be interpreted as a null finding as opposed to a statistically significant finding of a positive relationship between AVID and the grade 11 HSPA LAL score. I argue that both arguments are credible. Accepting the null hypothesis of no effect would not be a question if the sample size was large enough to produce more statistical power, but that is not the case in this study. Because of that, the effect size ought to influence the interpretation. Because in the case of this study the effect sizes are medium with ranges between .443 (reduced model) and .558 (complete model), I argue that there is enough in the data to warrant the conclusion I present above of a positive effect. Ultimately, the recommendations I make below regarding future studies with larger sample sizes will be helpful in producing more statistically compelling estimates of AVID's effect on student language arts scores.

TABLE 22

LAL HSPA, Reduced Model

HSPA LAL (Grade 11)	B	Std. Error	t	Sig.	Effect Size
AVID or Comparison	5.710	3.213	1.777	0.076	0.443
NJASK8 Math	0.055	0.067	0.815	0.415	0.004
NJASK8 LAL	0.189	0.101	1.871	0.061	0.015
Free or Reduced Lunch	-8.793	3.569	-2.464	0.014	-0.682

Notes: R^2 = (.374-.426), n=50

College Preparation. This study found that AVID students were more likely than comparison students to participate in PSAT testing. Though this exact finding is not found in the current literature, there is evidence that AVID students present higher levels of college knowledge – essentially a construct that accounts for the awareness of the nuances of the application and acceptance process (Lozano et al., 2009; Watt et al., 2007). I would argue that registration for and participation in PSAT testing is part of that college preparation process, and in this sense, the findings of this study are consistent with the existing research.

PSAT Scores. Table 18 demonstrates that there was not a significant difference found between AVID students and comparison students on the PSAT. At first glance accepting the null hypothesis that AVID has no impact on PSAT scores appears reasonable. However, in the context of this study this finding can be interpreted as a positive effect by the AVID site team at Fairview High School and by the AVID research community. Table 17 notes a highly significant relationship (p value of less than .001) between student participation in PSAT testing and student enrollment in the AVID elective class. That AVID students were far more likely (effect size of .763) to take the PSAT and that they did not score lower than comparison students who were far less

likely to take the PSAT indicates that AVID may be contributing toward improving the performance of students in the areas assessed on the PSAT. The data suggests that many AVID students would not have had the confidence to take the PSAT if they were not enrolled in the AVID elective class. This implies that these students learned skills in the AVID elective class that gave them the confidence to participate in PSAT testing. Without this confidence, they would likely have made the same choice that many students in the comparison group made; that is, not to test on account of the perception of an inadequate skill set. To be clear, this is speculation based on interpretation of the data; however, the point is that accepting the null hypothesis in this instance is not necessarily an indication of a lack of impact by the AVID program.

Attendance. This study did not find a significant relationship between participation in AVID and student attendance. Prior research has indicated that AVID students attend school at rates higher than comparison students (Watt et al., 2002-2003; Watt et al., 2004). However, where AVID students attended school at rates between three and five percentage points higher than comparison students the comparison group consisted of the rest of their grade level class and data was generated without statistical controls and tests of statistical significance (Watt et al., 2002-2003; Watt et al., 2004). Such designs call the validity of the findings into question. Other research has found inconsistent results within the study reporting with statistical significance that in one cohort of students the comparison students had fewer absences than AVID students while in another cohort the reverse was true, but the finding was not statistically significant (Black et al., 2008). The current study demonstrated that AVID students did not have fewer absences than comparison students, though the relationship was not statistically

significant. However, the current study included an appropriate comparison group and controlled for multiple variables thus lending greater validity to its findings. Therefore, the current study contradicts prior evidence that AVID has a positive impact on student attendance (Watt et al., 2002-2003; Watt et al., 2004) and is consistent with prior evidence that AVID may in fact have a negative impact on student attendance (Black et al., 2008).

If AVID is producing an adverse effect on student attendance then it begs the question of what might possibly be the cause. One possibility is that AVID students must complete a lot of school work that the rest of their classmates do not. It may be the case that AVID students experience a 'burn out' effect on account of this which is part of the explanation that the null hypothesis is accepted in this case. AVID students are also academically stretched when placed into more rigorous courses as this study demonstrates. As a result, it may also be the case that AVID students are more likely to feel overwhelmed by their rigorous school work which is contributing to a null effect with respect to absences.

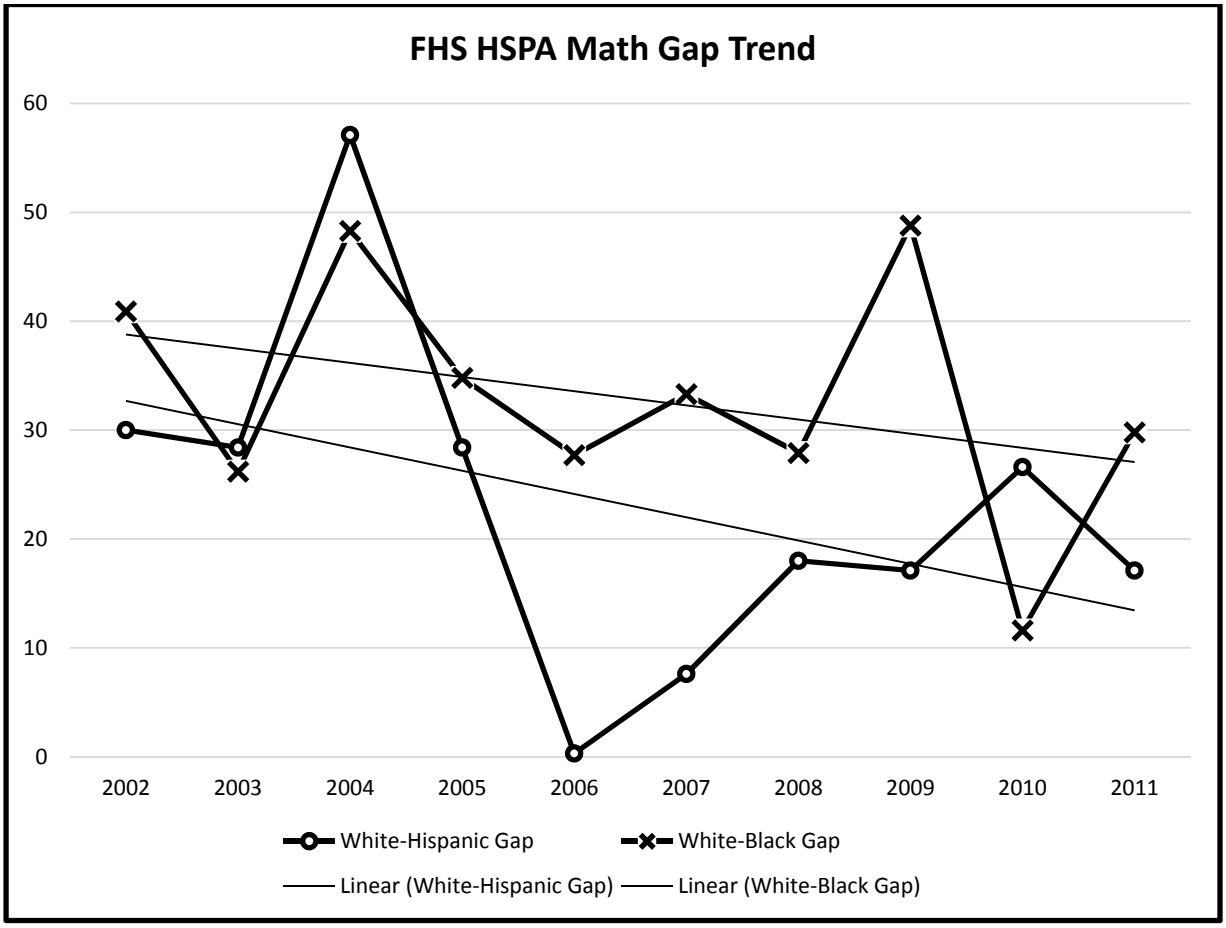
Math Standardized Assessments. This study did not find a statistically significant relationship between participation in AVID and performance on math standardized assessments. Table 4 above shows that grade 11 AVID students outperformed the comparison group on the math HSPA while grade 9 and 10 AVID students performed lower than the comparison group on the math ACT and PHA respectively; however, these differences were not statistically significant. This finding is consistent with prior research. For example, researchers found that in one cohort AVID students outperformed non-AVID students on a math standardized assessment while in

another cohort the reverse was true; however, like in the case of the current study, neither of the differences were statistically significant (Guthrie & Guthrie, 2000). Other research using a quasi-experimental design also failed to measure a statistically significant relationship between AVID and standardized test scores in math (Black et al., 2008). Also consistent with prior research is the combination of AVID standardized math scores and math course taking patterns. Researchers found that AVID students passed a math standardized assessment at approximately 15% lesser rate than the same students' passing rate on a language arts assessment even though AVID students had the highest percentage of students taking advanced math of the groups in the study (Lozano et al., 2009). Other researchers reached findings contradicting the results of the current study and much of the prior research in that AVID students when compared with themselves over a three year period saw a greater gain in passing rates on math standardized tests than they did on English standardized tests; however, these data were presented as descriptive statistics and not as statistically significant findings (Watt et al., 2002-2003).

These data raise questions about why AVID did not have a statistically significant impact on student performance on math standardized assessments at Fairview High School. One variable worth considering is that, as Table 4 indicates, AVID students were more likely than comparison students to be enrolled in a more rigorous math course. One might hypothesize that being enrolled in a more rigorous math course has a two implications. The first implication is that students are more skilled in math. The second implication is that students are engaged in more challenging math coursework. It could be argued that both ought to be associated with higher performances on standardized test scores in math; however, that was not the case with the current study.

Adding to the implications of accepting the null hypothesis with respect to AVID's impact on math standardized test scores is the fact that the largest of the achievement gaps at Fairview High School are seen in math scores. Figure 18 shows graphically that despite some closing of the gap in the last decade, a significant math achievement gap remains at Fairview High School. Moreover, when comparing the rate at which the math achievement gap is closing with the rate at which the language arts achievement gap is closing it becomes more obvious that math is where the most work remains for the professionals at Fairview High School. Lastly, looking at the data just in terms of room for growth, comparing Figures 15 and 16 above demonstrates that despite the remaining gap in language arts, the percentage of students from underperforming subgroups scoring partially proficient has ranged only from the mid-single digits to around 10% in recent years while the same for the math HSPA has ranged from the low 20s to nearly 40%. Thus, accepting the null hypothesis with respect to AVID's impact on math scores in the context of the school wide math achievement data adds urgency to the notion that more work must be done to address math achievement at Fairview High School. The AVID site team's planning for additional math supports in subsequent years ought to be just one part of a larger effort to improve math student performance.

FIGURE 18



An explanation as to why AVID students at Fairview High School did not outperform comparison students on math standardized assessments may be found in the AVID implementation guide (the CSS). While the CSS emphasizes the primacy of reading and writing skills, the role of math skills is not explicitly included in the implementation document. As a consequence, it may be the case that effective implementation of AVID is, by design, a better support for improving language arts skills than math skills.

School Wide Achievement. Table 23 shows the school average for those outcome measures for which school averages were available. Firstly, this information supports the claim that the AVID students at Fairview High School are "middle

achieving" students in accordance with one of the selection criteria for AVID students. Secondly, this data provides additional context through which to interpret the findings of this study. AVID aims to take middle achieving students, provide them supports, and challenge them in rigorous courses. Students are then expected to perform well relative to their peers on account of the skill set they acquire in the AVID class. Though Table 23 presents only descriptive statistics on standardized tests, it does suggest that at its current level of implementation and effectiveness AVID is not yet lifting students beyond their initial entry point of a middle-achieving student.

TABLE 23

FHS SCHOOL AVERAGES

	AVID	Comparison	School
ACT LAL	15.15	15.76	17.4
ACT Math	17.00	17.06	18.8
PHA LAL	42.43	43.52	44.93
PHA Math	28.00	29.91	30.1
HSPA LAL	241.86	235.75	245.62
HSPA Math	230.23	224.93	239.87

Study Strengths and Limitations

This study involves design strengths that are rare in the current body of research on AVID. One strength of this study is that the sample and context are different than samples and contexts used in prior studies, and therefore the findings add something novel to the field. The context of the current study is a middle class suburban high school in a mid-Atlantic state. As such, the sample of this study is different than samples derived from the contexts in the existing literature. As examples, in terms of demographic composition, prior studies have included exclusively high school Hispanic

students in Texas (Lozano et al., 2009), a sample that included 78% Hispanic and Black high school students in Texas (Watt et al., 2004), a sample that included 67.5% Hispanic and Black middle school students in the northeast (Black et al., 2008), a study focused exclusively on Black high school students in rural North Carolina (Hubbard & Mehan, 1999), a sample that included AVID program graduates from San Diego high schools (Mehan et al., 1994), a sample that included 69% Hispanic and Black AVID program graduates from San Diego high schools (Mehan et al., 1992), and a sample of exclusively Mexican-American AVID program graduates from high schools in Texas attending Hispanic-serving post-secondary institutions (Mendiola, et al., 2010). The current study includes a sample of high school students from a middle class New Jersey suburban town with 59.5% of the sample either Hispanic or Black placing it in an underresearched context for AVID schools.

The comparison group in the sample used for this study also makes the study unique in the body of research. The comparison groups used in prior studies included AVID students prior to their enrollment in AVID (Watt et al., 2002-2003), all students at a given school in the same grade level as the AVID students (Watt et al., 2004; Watt et al., 2002-2003), local and national averages of students in the same grade as AVID students (Mehan et al., 1992; Watt et al., 2004; Watt et al., 2002-2003), students with different years of experience as an AVID student (Guthrie & Guthrie, 2000), students participating in the GEAR UP program (Lozano et al., 2009), and students that were demographically similar to AVID students but were not enrolled in AVID (Watt et al., 2006; Black et al., 2008). Of these, the last two comparison groups most closely resemble the comparison group used for this study; however, they remain different in

important ways. Specifically, though prior research using quasi-experimental design with statistical controls included a comparison group of non-AVID students that were demographically similar to AVID students, the entire sample was drawn from exclusively middle school students (Black et al., 2008). Conclusions about AVID's effect on middle school performance measures cannot necessarily be generalized to high school AVID students. In addition, though statistical tests were included when presenting outcome measures, there was no evidence that a statistical test comparing AVID and comparison groups on demographic and prior achievement variables was used (Black et al., 2008). Other research using comparison groups of non-AVID students relied on school-wide data rather than individual cohort or student data (Watt et al., 2006). A novelty of the current study is that it includes a comparison group of non-AVID students that has been demonstrated to have no statistically significant differences between comparison and AVID groups (see Table 2 above). In addition, the current study includes the most valid comparison group seen in the literature for answering questions about AVID's effectiveness at the high school level. The comparison group involves high school students that are statistically shown to be similar to the AVID students in terms of student demographics and prior achievement, and that attend the same school as the AVID students, and as a consequence, are exposed to the same teachers, curriculum, assessments, grading systems, and school culture.

Though the study includes design strengths, it is not without limitations. A limitation of the study is that AVID's impact after a minimum of only one year of enrollment in the AVID elective was measured. It may be the case that AVID's impact on outcome measures associated with college readiness is best measured after multiple

years of a student's enrollment in the AVID elective – perhaps ideally after a student completes four years of high school in the program.

Another limitation is that the 2012-2013 school year was only the second year of AVID's implementation at Fairview High School. It would be imprudent for readers to conceive of AVID at Fairview High School as a mature program; rather, AVID's implementation is in a developmental stage and hence I would caution against relying exclusively on this study to generalize about AVID's impact.

The oldest students in the sample for this study were in grade 11 during the 2012-2013 school year. This represents a limitation in that there are measures that could be used to assess student college-readiness that were simply unavailable at the time of the study. These variables are identified below in the suggestions for future research of AVID at Fairview High School and include SAT scores, college acceptance rates, and first year college GPAs. These data were simply not available, though measuring them would produce a more complete account of AVID's estimated impact on student college readiness.

Research on AVID has found that some AVID sites report an "AVID effect". The "AVID effect" refers to the positive effect AVID has on improving the performance of all of the students in a school, not just the students that take the AVID elective (Watt et al., 2004; Lozano et al., 2009). It has also been suggested that the fact that comparison students in the same school as AVID students may receive the "AVID effect" can help explain why quantitative studies looking at outcome measures comparing AVID and comparison groups composed of students within the same school as AVID students may not find many significant effects associated with AVID (Lozano et al., 2009). Though

the "AVID effect" has only been suggested qualitatively and not measured as actual effects in the existing research, the possibility that this effect is occurring at Fairview High School is a limitation of this study because the effect may be uplifting the performance of the comparison students. This "AVID effect" at Fairview High School is revisited in the following section.

Suggestions for Further Research on AVID at Fairview High School

The findings of this study show AVID to be only partially effective at reducing achievement gaps at Fairview High School on the measured variables in this study after the 2012-2013 implementation year. In light of this, the site team may wish to consider a study that focuses more on AVID's implementation rather than its outcomes to determine if the program is being implemented with fidelity. The findings of this study do suggest faithful implementation primarily of Essentials Four and Five at Fairview High School. A study focused on implementation of other Essentials in the CSS document would inform the Fairview High School site team on whether or not AVID's lack of measured effect on outcomes in this study is related to deficiencies in AVID's implementation, or if the lack of measured effect is simply the product of a well-implemented AVID program not designed to support improvements in these outcomes. The CSS document is a helpful starting point for examining AVID's implementation at Fairview High School, however it is not a scientific self-study document. Qualitative or mixed-methods research involving the stakeholders and their perceptions regarding AVID's implementation might serve the site team well in better understanding the quality of its implementation of the program.

Because the 2012-2013 school year represented only the second year of AVID's implementation at Fairview High School, studies that methodologically emulate this study while focusing on additional outcome measures as they become available will be useful to the AVID site team. For example, information regarding AVID's impact on SAT scores, on the number of colleges students apply to, the number of colleges students are accepted to, the percent of students that enroll in four year colleges and universities, college retention rates, college GPAs, and college graduation rates would all be very meaningful for Fairview High School's site team to know.

As is noted in the preceding section, there is the possibility that AVID has an effect not only on AVID students, but on all students at Fairview High School. As an active member of the site team at Fairview High School I have knowledge of the implementation of certain AVID strategies school wide that may be producing the "AVID effect". Over the first two years of implementation at Fairview High School the staff has been informed that AVID has two main areas of focus. The first, and by far the most critical, is the specific treatment received by the AVID students in the AVID elective class. That treatment and its effects at Fairview High School are the subject of this study. The second area of focus at AVID schools is a modification of the general treatment received by all students. Essentially, the expectation is that many of the core strategies used by students in the AVID elective class will be beneficial to all students if used in all classes throughout the school. Reporting on this anecdotally on account of my role as practitioner, I can confirm that the staff at Fairview High School has received professional development periodically (2-4 times per year) during its implementation of AVID on selected AVID strategies such as Cornell note-taking, Socratic Seminars,

Critical Reading, and a structured discussion protocol known as Philosophical Chairs. Though the staff has been trained in these strategies there has been little accountability for their use; rather, the staff has been encouraged to incorporate these strategies into their instruction as they deem appropriate to support student learning goals.

Because of the school wide professional development on AVID strategies noted above the site team at Fairview High School may want to examine the extent to which the "AVID effect" may be occurring at Fairview High School and if that phenomenon explains some of the results of this study. My speculation as both practitioner and researcher is that, more so than even the specific treatment received by AVID students, the school wide focus of AVID is in its developmental infancy at Fairview High School and is not likely at the time of this study to have contributed to any significant difference or lack of difference measured between AVID and comparison students.

In addition to studies that measure additional outcomes at Fairview High School related to AVID, future data collection and analysis that emulates this study precisely would serve the site team well. Simply collecting more of the same data collected in this study will likely provide a more refined understanding of AVID's estimated effects and yield more solid conclusions than those reached in this study.

A particular novelty of this study is the strength of schedule indicator that was constructed to compare the overall rigor of student schedules between AVID students and comparison students. This indicator has potential value to Fairview High School beyond just understanding AVID's impact. Fairview High School can use this indicator to measure school wide rigor if it chooses and measure the rigor of student courses for a

variety of subgroups within the student population. Such measurements would provide information about course taking trends across the school.

Suggestions for Further Research on AVID Generally

In addition to the specific study of AVID's implementation and impact at Fairview High School that is recommended above, research on AVID in general at schools across the country would be useful to current and prospective AVID schools. AVID's mission is to close the achievement gap by preparing students for college readiness and success in a global society (AVID, n.d.). An underresearched area is AVID's impact on actually closing the achievement gap. Though much of the research on AVID (such as this study) measures AVID's estimated impact on a number of student outcome variables, there has not been any reporting on AVID's efficacy at actually closing identified achievement gaps. Since closing the achievement gap is AVID's stated mission it would be useful for current and prospective AVID schools to know with confidence whether or not AVID is effective at closing achievement gaps within schools and across AVID schools in general. Relatedly, it would be helpful if AVID would clarify its mission by identifying exactly what gap or gaps it is referring to by the language in its mission statement. This would provide researchers with guidance necessary for designing evaluation studies that are fair to AVID in that they measure effects that AVID *specifically* claims to produce.

Another area that would be useful for future research to focus on stems from the emphasis on preparing students for college readiness and success in a global society found in AVID's mission statement. Future research that estimates AVID's impact on these concepts would first require clear and consistent definitions of "college readiness"

and “success”. Once accepted definitions of these concepts are established then research on AVID’s ability to promote college readiness and success in AVID students must be measured.

In general, more research on AVID’s impact on a variety of outcome measures is needed in order for practitioners and researchers to reach consensus on the efficacy of AVID. Research needs to include statistical controls as well as tests of statistical significance. In particular, research across a more diverse pool of AVID schools that controls for not only demographic and prior achievement variables, but also levels of AVID implementation such as ratings on the CSS Essentials and indicators, certification levels, number of years of AVID implementation, and the number of years of experience the AVID elective teacher has, would likely produce conclusive results.

Research that focuses on implementation and its effects would also be valuable. In particular, research that makes connections between the AVID implementation essentials and student performance outcomes would be valuable. For example, if it is determined that certain Essentials are associated with larger effect sizes than others AVID site teams may wish to prioritize their implementation and focus their action planning around those Essentials that are most likely to affect student achievement.

References

Adelman, C. (2004). Answers in a toolbox: Academic intensity, attendance patterns, and bachelor's degree attainment. Retrieved from http://www.postsecconnect.org/files/AnswersintheToolbox.pdf.

AVID. (n.d.). What is AVID? Retrieved from www.avid.org.

AVID. (2011). AVID Certification Report and Self-Study Continuum. Document.

Black, A.C; Little, C.A.; McCoach, D.B.; Purcell, J.H.; Siegle, D. (2008). Advancement Via Individual Determination: Method selection in conclusions about program effectiveness. *The Journal of Educational Research, 102(2)*, 111-123.

Bleske-Rechek, A.; Lubinski, D.; & Benbow, C.P. (2004). Meeting the educational needs of special populations: Advanced placement's role in developing exceptional human capital. Psychological Science, 15(4), 217-224.

Byrd, K.L. & Macdonald, G. (2005). Defining college readiness from the inside out: First-generation college student perspectives. Community College Review, 33(1), 22-37.

Cabrera, A.F.; Deil-Amen, R.; Prabhu, R.; Terenzini, P.T.; Lee, C.; Franklin, R.E. (2006). Increasing the college preparedness of at-risk students. *Journal of Latinos and education, 5(2)*, 79-97.

Carpenter, D.M.; Ramirez, A. & Severn, L. (2006). Gap or gaps: Challenging the singular definition of the achievement gap. Education and Urban Society, 39(1), 113-127.

College Board. (2011). The College Board Advanced Placement State Summary Report. Retrieved on March 11, 2012, from http://www.collegeboard.com/student/testing/ap/exgrd_sum/2011.html.

Conley, D. (2007). Toward a more comprehensive conception of college readiness. Eugene, Or: Education Policy Improvement Center.

Contreras, F. (2011). Strengthening the bridge to higher education for academically promising underrepresented students. Journal of Advanced Academics, 22(3), 500-526. Cook, T.D.; Scriven, M.; Coryn, C.L.S.; & Evergreen, S.D.H. (2010). Contemporary thinking about causation in evaluation: A dialogue with Tom Cook and Michael Scriven. *American Journal of Education, 31(1),* 105-117.

Gall, M.D.; Gall, J.P.; Borg, W.R. (2010). *Applying Educational Research*, (6th ed.). Pearson Education, Inc.

Gandara, P. & Bial, D. (2001*). Paving the way to postsecondary education: K-12 education programs for underrepresented youth. Report of the national postsecondary education cooperative working group on access to postsecondary education*. (NCES report NO. NCES2001205). Washington, DC: National Center for Education Statistics.

Guskey, T.R. (2005). A historical perspective on closing achievement gaps. NASSP Bulletin, 89(644), 76-89. Guthrie, L.F.; Guthrie, G.P. Longitudinal research on AVID 199-2000: Final report. *Center for Research, Evaluation and Training in Education, June 23, 2000,* 1-24.

Haro, Robert. (2004). Programs and strategies to increase Latino students' educational attainment. Education and Urban Society, 36(2), 205-222.

Huerta, J.; Watt, K.M.; & Reyes, P. (2012). An examination of AVID graduates' college preparation and postsecondary progress: Community college versus 4-year university students. Journal of Hispanic Higher Education, 12(1), 86-101.

Kobrin, J.; Patterson, B.; Shaw, E.; Mattern, K.; & Barbuti, S. (2008). Validity of the SAT for predicting first-year college grade point average. College Board research report No. 2008-5.

Ladson-Billings, G.L. (2006). From the achievement gap to the education debt: Understanding achievement in U.S. schools. Educational Researcher, 35(7), 3-12.

Lombardi, A.; Seburn, M., & Conley, D. (2011). Development and initial validation of a measure of academic behaviors associated with college and career readiness. Journal of Career Assessment, 19(4), 375-391.

Lozano, A.; Watt, K.W.; & Huerta, J. (2009). A comparison study of 12th grade Hispanic students' college anticipations, aspirations, and college preparatory measures. *American Secondary Education, 38(1),* 92-110.

Mehan, H.; Datnow, A.; Bratton, E.; Tellez, C.; Friedlaender, D.; & Ngo, T. (1992). Untracking and college enrollment. *National Center for Research on Cultural Diversity*, 1-25.

Mehan, H.; Hubbard, L.; & Villanueva, I. (1994). Forming academic identities: Accommodation without assimilation among involuntary minorities. *Anthropology & Education Quarterly*, *25(2)*, 91-117.

Mendiola, I.D.; Watt, K.M.; Huerta, J. (2010). The impact of advancement via individual determination (AVID) on Mexican American student enrolled in a 4-year university. *Journal of Hispanic Higher Education, 9(3),* 209-220.

National Center for Education Statistics. (2011). *The condition of education in 2011*. Washington, DC: U.S. Government Printing Office.

New Jersey Department of Education (NJDOE). 2010-2011 Enrollment Data. http://www.state.nj.us/education/data/enr/enr11/stat_doc.htm

New Jersey School Report Card. Fairview Borough High School. (2010). State of New Jersey Department of Education. http://education.state.nj.us/rc/rc10/rcreport.php?c=25;d=1650;s=050.

Organization for Economic Co-operation and Development (OECD). (2013). Education Indicators in Focus, (vol 1, January 2013). http://www.oecd.org/edu/skills-beyond-school/EDIF%202013--N%C2%B010%20(eng)--v9%20FINAL%20bis.pdf

Patton, M. Q. (2008). Utilized Focused Evaluation: The New Century Text. Sage Publications, 4th Edition.

Perna, L.W.; Rowan-Kenyon, H.; Bell, A.; Thomas, S.L.; Li, C. (2008). A typology of federal and state programs designed to promote college enrollment. *The Journal of Higher Education, 79(3)*, 243-267.

Porter, A.C. & Polikoff, M.S. (2012). Measuring academic readiness for college. Educational Policy, 26(3), 394-417.

Reardon, S.F. (2011). The widening academic achievement gap between the rich and the poor: New evidence and possible explanations. In R. Murnane & G. Duncan (Eds.), Whither Opportunity? Rising Inequality and the Uncertain Life Chances of Low-Income Children. New York: Russell Sage Foundation Press.

Rossi, P. H., Lipsey, M. W., & Freeman, H. E. (2004). Evaluation: A Systematic Approach. Sage Publications, 7th Edition. (RLF on syllabus).

Saenz, V.B.; Hurtado, S.B.; Barrera, D.; Wolf, D.; & Yeung, F. (2007). First in my family: A profile of first generation college students at four year institutions since 1971. Retreived from http://www.heri.ucla.edu/pdfs/pubs/briefs/firstgenresearchbrief.pdf.

Seidman, I. (2006). *Interviewing as qualitative research: A guide for researchers in education and the social sciences* (3rd ed.) New York: Teachers College Press.

Shettle, C.; Roey, S.; Morica, J. Perkins, R.; Nord, C.; Teodorovic, J. et al (2007). *America's high school graduates: Results from the 2005 NAEP high school transcript study* (NCES Publication No. 2007467). Washington, D.C.: U.S. Government Printing Office.

Standing, K.; Judkins, D.; Keller, B.; Westat, & A.S. (2008). *Early outcomes of the GEAR UP program – a final report*. A report prepared for the U.S. Department of Education, Office of Planning, Evaluation and Policy Development. Washington, D.C.

Thomas, S.L., & Perna, L.W. (2004). The opportunity agenda: A reexamination of post-secondary reward and opportunity. In J.C. Smart (Ed.), Higher education: handbook of theory and research (19), 43-84.

Tierney, W.G.; Serra, L. (Eds.). (2002). *Access to college: Extending possibilities for all students*. Albany, NY. State University of New York Press.

Timperley, H.S. & Parr, J.M. (2007). Closing the achievement gap through evidence-based inquiry at multiple levels of the education system. Journal of Advanced Academics, 19(1), 90-115.

United States Department of Education. National Center for Education Statistics. (2013). Data Explorer for NAEP, Long Term Trends in Math and Reading, & High School Transcripts (online data files). Retrieved from http://nces.ed.gov/nationsreportcard/naepdata/.

United States Department of Labor. Bureau of Labor Statistics. (2013). Data Explorer for Labor Statistics (online data files). Retrieved from http://www.bls.gov/data/.

Verdugo, R. (2011). The heavens may fall: School dropouts, the achievement gap, and statistical bias. Education and Urban Society, 43(2), 184-204.

Warburton, E.C., Bugarin, R., & Nunez, A.M. (2001). Bridging the gap: Academic preparation and postsecondary success of first-generation students. Washington, DC: National Center for Education Statistics.

Watt, K.M.; Yanez, D.; Cossio, Griselda (2002-2003). AVID: A comprehensive school reform model for Texas. *National Forum of Education Administration and Supervision Journal, 19(3),* 43-59.

Watt, K.M.; Powell, C.A.; Mendiola, I.D. (2004). Implications of one comprehensive school reform model for secondary school students underrepresented in higher education. *Journal of Education for Students Placed at Risk, 9(3),* 241-259.

Watt, K.M.; Huerta, J.; Cossio, G. (2004). Leadership and AVID implementation levels in four south Texas border schools. *Catalyst for Change, 33(2),* 10-14.

Watt, K.M.; Powell, C.A.; Mendiola, I.D.; Cossio, G. (2006). Schoolwide impact and AVID: How have selected Texas high schools addressed the new accountability measures*? Journal of Education for Students Placed at Risk, 11(1),* 57-73.

Watt, K.M.; Huerta, J.; Lozano, A. (2007). A camparison study of AVID and GEAR UP 10th grade students in two high schools in the Rio Grande Valley of Texas. *Journal of Education for Students Placed at Risk, 12(2),* 185-212.

Watt, K.M.; Johnston, D.; Huerta, J.; Mendiola, I.D.; & Alkan, E. (2008). Retention of first-generation college-going seniors in the college preparatory program AVID. *American Secondary Education, 37(1),* p. 17-40.

Watt, K.M.; Mills, S.J.; & Huerta, J. (2010). Identifying attributes of teacher leaders within the advancement via individual determine program: A survey of school principals. *Journal of School Leadership, 20 (3),* 352-268.

Yampolskaya, S.; Massey, O.T.; & Greenbaum, P.E. (2006). At-risk high school students in the "Gaining Early Awareness and Readiness" program (GEAR UP): Academic and behavioral outcomes. *The Journal of Primary Prevention, 27(5),* p. 457-475.

Yin, R.K. (2009). *Case Study Research: Design and Methods* (4th ed.). Sage Publications, Inc.