# ATTRITION IN A HIGH SCHOOL COLLEGE READINESS SYSTEM: ADVANCEMENT VIA INDIVIDUAL DETERMINATION (AVID)

by

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DISSERTATION

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**ABSTRACT**

ATTRITION IN A HIGH SCHOOL COLLEGE READINESS SYSTEM:

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The purpose of this study is to examine the substantial attrition that occurs during the high school years in the college readiness system known as Advancement Via Individual Determination (AVID). The literature on this topic is very minimal, and studies in which students are dropping out of AVID are virtually non-existent. Through this study, I attempt to determine which characteristics of students that join AVID in the ninth grade are associated with exiting AVID prior to high school completion, and relative to one another, how strong those characteristics are as predictors of AVID dropout. I analyze student-level data from a cohort of seniors in a large urban/suburban district in Texas. The data set is comprised of 382 students who joined AVID in ninth grade and remained in the district for all four years of high school, 168 of whom dropped out of the program before the end of their senior year. Correlation analysis and logistic regression reveal that a variety of individual characteristics are associated with AVID dropout. More specifically, Black students and students whose home language is not English are less likely to drop out of AVID, while Asian students are more likely to drop out of AVID. Students' cumulative GPA and grade in the AVID class were also strong predictors of AVID

dropout with lower grades indicating a likelihood to drop out. Since this is the first quantitative examination of AVID dropout, there are a variety of implications for future research that can address the existing knowledge gap. I conclude by discussing these implications alongside those relating to the practical aspects of AVID recruitment, retention, and program deployment.

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I must thank my family for believing in me and giving up the time that I was sitting at my desk instead of being with you. I know that it seems like this took forever. It did to me too. I hope that my persistence encourages you to pursue your dreams as well.

## DEDICATION

I dedicate this dissertation to my wife, Amy Mozingo, who has taught me through her words and actions that anything is possible. You inspire, comfort, and encourage me. I simply could not have done this without you.

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# CHAPTER ONE: INTRODUCTION

## Introduction

In 2011, 68.2% of all students who completed high school enrolled in either a two-year or four-year college. However, less than 60% of students who started college in 2004 with the intent to obtain a bachelor's degree had done so by 2011 (National Center for Education Statistics, 2012). In addition, 21.7% of freshmen that started college in 2004 were required to take a remedial course in at least one subject before they could enroll in college-level courses within that same subject area (National Center for Education Statistics, 2014a). Per Conley (2007), seeing that over 20% of students need additional learning to be prepared for a college course and that 40% of students never complete a bachelor's degree leads many to believe that the average high school student is not ready for college. In addition to the college readiness gap that appears to face all students, there appears to be an even larger gap for students of color. While 20.8% of White freshmen who started college in 2004 have taken a remedial course in the past five years, the percentage is 24.8% for Black students and 22.1% for Hispanic students (National Center for Education Statistics, 2014a).

Despite increases in college enrollment for students of color, there are still notable differences in college education attainment in the United States. In 2009, among White adults aged 25 and over, 90.4% had a high school diploma or higher and 31.1% had a Bachelor's degree or higher. Among Black adults, 81.4% had a high school diploma or higher and 17.6% had a Bachelor's degree or higher. Among Hispanic adults, the 60.9% held a high school diploma or higher and only 12.6% obtained a Bachelor's degree or higher (Ryan & Siebens, 2012). What is clear is that the gap between these groups increases between high school and college. While the percentage of Hispanic high school graduates is one-third lower than White

high school graduates, the percentage of Hispanic college graduates is 60% lower than that of White college graduates. The percentage of White college graduates is double the percentage of Hispanic and Black college graduates, combined. In addition, while 61.5% of White students complete a bachelors' degree in six years, only 39.5% of Black students and 50.1% of Hispanic students complete a bachelor's degree in that time frame (National Center for Education Statistics, 2014b).

Sometimes, the problem is not only academic in nature. First-generation college students told Byrd and MacDonald (2005) that skills such as time management, focus, and self-advocacy, which are often not directly taught in high school, are critical for success in college. For first-generation college students, it is important for someone to explain the college system to them, including the many differences between high school and college. First-generation college students may not receive guidance help from their parents in understanding where to go for assistance and how to manage a college schedule, especially if outside work or time commitments were added to the process (Byrd & MacDonald, 2005; Reid & Moore, 2008; Stayhorn, 2014).

In response to this gap in resources and knowledge, many "college preparation programs" have been created, including College Summit, Puente, Upward Bound, and Advancement Via Individual Determination (AVID), as well as several others (Tierney & Auerbach, 2005). These programs strive to provide some of the non-curricular learning that is believed to help students be successful in college, such as study skills, time management, and self-advocacy (Oesterreich, 2000). Traditionally, many of these programs, due to time, funding, and expertise, tend to focus on a specific type of service, such as test preparation or college information. However, programs

with a more comprehensive and long-term approach have been shown to have the greatest impact (Oesterreich, 2000).

## AVID

For over 35 years, Advancement Via Individual Determination (AVID) has grown from serving 30 high school students in San Diego, California, to over 1,500,000 students from elementary grades through higher education around the world (AVID, 2016). AVID is a college readiness system, designed to increase performance and learning in the AVID elective classroom and school-wide. The focus of AVID is on serving students in the "academic middle", who are often underrepresented on college campuses, with the academic middle being defined as those students who are not at the top or bottom of their class rank based on their grade point average (GPA). Many of these students are the first in their family to attend college, and they may come low socio-economic families who are not aware of how to help their children best position themselves for success in high school and college. AVID attempts to close the achievement gap by helping all students learn the skills necessary to be successful in college and in a global society (AVID, 2016).

AVID was started by an English teacher by the name of Mary Catherine Swanson in 1980 at Clairemont High School in San Diego. In examining the low numbers of students from certain ethnic and racial groups enrolled in state universities at the time, and seeing the rapid change in her school brought on by the voluntary desegregation program in the San Diego Unified School District, Swanson decided to address the academic gap that she witnessed between the more affluent students and the lower-income students. She decided to focus on helping her students improve the skills necessary to be successful in high school and college. She

began with a single elective class of 30 students, for which she created the acronym AVID, based on the Latin “avidus”, meaning “eager for knowledge” (Swanson, 1989; Swanson, 1996)

Today, around the world, AVID is offered as an elective class in secondary schools to a select number of students who have applied and been accepted into the elective class. The selection is based on each student meeting certain criteria, such as being the first in a family to go to college or being in a historically underrepresented group in higher education, such as low-income and students from specific ethnic and racial groups. The primary elements that make a student right for AVID are a desire to attend college and a willingness to work hard (AVID, 2016).

The AVID course is designed such that students can take the AVID Elective class for up to seven years, beginning in the 6$^{th}$ grade. Many students join after the 6$^{th}$ grade, but the curriculum is different for each year and builds upon itself, helping to support students in rigorous classes and prepare them for college. Researchers have concluded that more time spent in the AVID class can have a significant positive impact on markers of student success, such as scores on standardized tests and GPA (Black, Little, McCoach, Purcell, & Siegle, 2008; Guthrie & Gurthrie, 2000; Huerta, Watt, & Butcher, 2013; Mehan, Villanueva, Hubbard, & Lintz, 1996: Watt, Yanez, & Cassio, 2002). Even potentially negative factors, like low socioeconomic status, have been shown to have little impact on student success if the student remains in AVID for multiple years (Huerta, Watt, & Reyes, 2013; Mehan, Villanueva, Hubbard, & Lintz, 1996: Watt, Huerta, & Alkan, 2011; Watt, Yanez, & Cassio, 2002).

## Statement of the Problem

While AVID has grown over the past thirty years, there is a problem with attrition within the AVID classes that has not been fully explored. As a cohort of students moves from freshmen

to senior year in high school, the number of students that remain the AVID elective class at each grade level decreases each year. Put another way, many students do not remain in AVID throughout high school, despite the program being designed for four years of participation. In the 2014-2015 school year, there were 35,586 seniors in AVID around the world (AVID Center, 2016). Looking at the data in the 2011-2012 school year, when those same seniors would have been freshmen, there were 76,306 freshmen in AVID (AVID Center, 2016). Thus, in looking at the same cohort of students, it appears the number of students in AVID dropped by 53% over that four-year period. In addition, the data collected by AVID for the 2014-2015 school year shows that approximately 70% of the seniors had been in AVID for three or more years (AVID Center, 2016). That indicates that nearly 30% of the seniors were added since the cohort had been freshmen, which means that out of the original 76,306 ninth graders that started AVID in 2011-2012, only about 24,900 of those students were still in AVID during their senior year of high school. This would indicate that the true attrition rate for the AVID students from their freshmen year until their senior year is over 67%.

A few researchers have explored "why" this attrition may be occurring. Some of the factors that were considered by Watt, Johnston, Huerta, Mendiola, and Alkan (2008) involved structural, ideological, financial, political, academic, and personal issues. Watt et al. (2008) found that different schools have very different attrition rates and that while strong teacher-student relationships and peer relationships in AVID increased the likelihood of a student staying in AVID through their senior year, factors such as schedule conflicts and lack of motivation caused students to leave the class. Watt, Yanez, and Cossio (2002) noted in their study that some students dropped out of AVID because they had been initially misidentified for the program. Other factors named included student preferences, district realignments, and student transfers.

They also noted that the biggest drop in students occurred in the ninth and tenth grades (Watt, Yanez, & Cossio, 2002).

What Watt et al. (2002; 2008) did not examine were the characteristics of the students that left the AVID elective class. While data is captured on the race/ethnicity, gender and socioeconomic status of students in the AVID elective classes, no data is kept about students that leave the AVID system. The data shows that when the seniors of 2014-2015 were freshmen in 2011-2012, 58.3% of AVID students were female and 41.7% were male. By their senior year, 63.1% of that cohort were female and 36.9% were male (AVID Center, 2016). This would indicate that more males leave AVID than females, or possibly, that the 30% who joined after their freshmen year were mostly female.

Another factor that could influence students' likelihood to leave AVID is race/ethnicity. An exploration of the racial makeup of those that are leaving AVID could perhaps uncover undiscovered patterns of institutionalized racism in the AVID curriculum, the selection process, or the individual classrooms themselves. Although AVID is designed to support students who are underrepresented in college, perhaps the program is not fully successful in that goal. If disproportionately large numbers of AVID students from families of low socioeconomic status or low educational attainment backgrounds are leaving the program, this could indicate a problem. Students are required to take a rigorous class load while in AVID and maintain a high GPA. If the students who are leaving AVID have heavy loads or falling GPAs, perhaps this would indicate that is a weakness in the support they are receiving. In looking for the patterns in the quantitative data, it may be possible to identify the students who are most likely to leave AVID, which could lead to more refined qualitative studies about why they are leaving and perhaps uncover

previously unidentified correlations in student profiles which could increase their likelihood of dropping out of AVID.

At the heart of the problem is the fact that up to 70% of students that join AVID as freshmen do not stick with it until their senior year. Why is this a concern? There are two issues that stand out. First, the ninth and tenth grade years in AVID are focused on study and organizational skills, such as note-taking, time management, and study skills. The junior and senior years are more focused on researching university options and preparing for college acceptance. While the skills in the first two years are certainly important, if the goal of AVID is to prepare students for college, then keeping them in the system during the years most focused on college entrance would seem to be important to its success.

In addition, any time an organization is losing nearly 70% of its members over a four-year period, there would seem to be a cause for concern. Something is causing tens of thousands of students who at one point saw the value of joining AVID to ultimately leave before the program's conclusion. Could this attrition pattern be the result of scheduling problems or of course selection issues? Is there something inherent in AVID that favors one gender over another or one ethnic group over another? Is the system driving away a specific type of student? In comparing the statistics of the 2014-2015 school year's senior class to the overall percentages of AVID students, the number of students counted as Black or White are much smaller percentages than Hispanic students. In addition, male students in the senior class are a much smaller percentage than females when compared to the average for all the secondary grades (AVID Center, 2016). Looking at the data, one could assume that White males and females as well as Black males are much more likely to leave AVID during high school while Hispanic females are

much more likely to join. However, this calls for a great number of assumptions and ignores other explanations for the data.

## Purpose of the Study

The intent of this study is to determine the characteristics of students most likely to drop out of AVID during their high school years. By studying trends in the characteristics of the students that entered and left an AVID system in one district, I will determine markers that can be used to identify students at risk of dropping out of AVID.

The first step in the process is to identify the characteristics that are most likely to be significantly correlated to AVID dropout. For instance, are students of a specific race/ethnicity or gender more likely to leave AVID? Does the fact that a student is labeled as Special Education or English as a Second Language (ESL) make a difference? Does socioeconomic status predict the likelihood that a student will remain in AVID in high school? The second step is to determine the relative impact of each of those factors on the probability of a student with certain characteristics staying in AVID or dropping out. For instance, is being labeled as Limited English Proficiency (LEP) a better predictor of attrition in AVID than which language is spoken at home? Does being "at-risk" mean that a student is less likely to stay in AVID than one who is "gifted and talented"?

## Significance

As the review of the literature offered in the next chapter will demonstrate, very little direct research on AVID exists, and almost none of the research has been done about attrition from the AVID system. What does exist is mostly qualitative in nature and regards the effectiveness of AVID in preparing students for college. While a few studies have been conducted on *why* students drop out of AVID, there is virtually nothing about *who* is leaving AVID, which is a significant gap in the literature. Studies have been conducted on high school

and college dropouts, and some of this research could be drawn upon to identify factors relating to AVID dropout. However, a study needs to be conducted on who is leaving the AVID system and how strong those predictors are in identifying those students most likely to leave.

In examining who is leaving the AVID elective class, it might be possible to identify gaps in the AVID system around support for specific genders, ethnicities, or other populations. It might also be possible to find conflicts in schedules, course selection, or extra-curricular activities that might make it more difficult for students to remain in AVID. These issues could potentially be applied to other college readiness programs or other school-related organizations. These gaps in AVID could point to larger systemic issues in schools and districts. Even beyond that, these issues could assist in identifying gaps that cause certain groups to be more likely to enter and finish college. If certain students are more likely to drop out of a college readiness program, it stands to reason that they would be more likely to drop out of college. Thus, once the type of student likely to drop out of AVID is identified, there is a greater potential of conducting more targeted qualitative studies to identify why this specific group of students is more likely to leave AVID. This could lead to targeted dropout interventions, changes to the AVID system and delivery approach, and perhaps other school-related organizations, all of which could help students be more successful in high school and beyond.

## Research Questions

My research questions are as follows:

1. What characteristics of students who enter the AVID system as freshmen are most strongly correlated with dropping out of AVID before high school graduation?
2. What are the relative strengths of these characteristics in impacting the odds of a student dropping out of the AVID system during high school?

## Research Design

The research site for this study is a large, urban/suburban, public school district in Texas. Within this site, I focused on a cohort of roughly 3,100 students that began as freshman in the district in the 2011-2012 school year and graduated in the spring of 2015 in the same district. Therefore, although only one district is being used as a sample, the number of students considered should be large enough to use as a significant measure for reference. The down side of using only one district is that it will not allow for the generalization of the findings to all AVID students around the world.

The data was extracted by district personnel from the district's database, where all the statistical information about students is stored, including demographics, schedules, grades, and standardized test scores. After meeting with the Assistant Superintendent over student information and explaining what was needed, the district provided three Microsoft Excel spreadsheets that contain the statistical information for the cohort being studied. The data has been stored on a password protected computer upon which the analysis is performed.

The first step in identifying the key variables for analysis was to compile descriptive figures allowing for comparison of the characteristics of those who dropped out of AVID in high school to those that stayed in the AVID elective class. The district provided descriptive data on each student's sex, home language, race/ethnicity, LEP, ESL, economically disadvantaged, at-risk status, special education, 504, and gifted and talented status, as well as GPA. This information was complete and distinct and thus suitable for comparison.

Each student's course schedule through the entirety of their high school education was also provided by the district. This allowed for the sorting of students into groups who had taken AVID and those who had not. From the list of those who had taken AVID as an elective class, it

was possible to identify those who had dropped out of AVID and those who remained in the program. By comparing the two groups of students, it is possible to isolate differences between them and determine which variables are significantly correlated with AVID dropout. Then, by utilizing logistic regression, I am able to identify the relative strengths of these variables in predicting AVID dropout. This in turn will inform future research and suggest possible opportunities for change in practice. Once it is clear what factors are strongest in the likelihood of a student leaving AVID, then it is possible to begin asking why that is a factor in both research and in practice.

## Researcher Standpoint

To provide background on this research and my approach to it, I will share some of my perspective. I became the teacher of an AVID Elective class in the spring of 2007. As the first AVID teacher in my district, I went through a process of identifying, recruiting, and selecting students for this class. It was a true learning process, which took years to improve. After putting all that work into the recruiting process, it was frustrating when many of those students (in fact, most of those students) did not stay in the AVID class for all four years.

After 6 years of teaching the class at a high school, I was hired by AVID Center to work as a Program Manager. My role is to support schools and districts with AVID as they attempt to implement the AVID program with fidelity. What I witnessed as I visited school after school is that they were also losing students over the course of their high school careers. As I studied the trends in the national AVID data, I saw that there were certainly groups that appeared to be dropping out more often than others. I could see that there were more females in the senior classes than in the freshmen classes. I could also see that there were fewer White students in the senior classes than in the freshmen classes. I wondered if there was truly a measurable pattern,

and if there were causes behind it. Were males more likely to drop out in general, or could it be shown that White males were more likely to drop out? After discussing this idea with the Data Department at AVID Center, it became clear that a quantitative study of AVID attrition had never been conducted. This was the impetus of this study, particularly with the focus on examining the interactions of different characteristics, or the compounding of those factors, as explored through the theoretical framework of Intersectionality.

## Definition of Key Terms

The following terms are defined as they will be used in this paper.

*Advancement Via Individual Determination (AVID).* AVID is a non-profit organization whose mission is to "close the achievement gap by preparing all students for college and success in a global society" (AVID Center, 2016).

*At-Risk*. In Texas, this is a PEIMS label for a student who is in danger of dropping out of school. There are more than 15 reasons why a student may receive this label.

*English as a Second Language (ESL)*. ESL is a set of curriculum and services offered to students for whom English is not their primary language (Texas Education Agency, 2017a).

*Gifted and Talented (GT)*. This is a student who excels based on age, experience, and environment, in intellectual, creative, or artistic area (Texas Education Agency, 2017c).

*Grade Point Average (GPA)*. A GPA is a score created by giving an assigned grade point to each letter grade for a class (A=4, B=3, etc.). These grade points are averaged together each semester to arrive at a grade point average.

*Limited English Proficient (LEP)*. For this paper, LEP is defined as students for whom English is not the first language that they learned and who have not scored as proficient on state English exams (Texas Education Agency, 2017a).

*Public Education Information Management System (PEIMS)*. PEIMS is all of the data requested by the Texas Education Agency from public schools, including data about student demographics, academic performance, and organizational information (Texas Education Agency, 2017d).

*Race/ethnicity*. For this paper, race and ethnicity are combined into one category. The subcategories of race/ethnicity in this paper are Asian, Black, Hispanic, White, and Other, since these were the categories provided by the district in their PEIMS data. Obviously, this is an over-simplification of race and ethnicity, but for the sake of correlation and logistic regression, each student was assigned to one of the five subcategories listed above, as indicated in the PEIMS data.

*Section 504*. Section 504 of the Rehabilitation Act of 1973 allows for services for students with disabilities that may not necessarily be labeled as Special Education under IDEA. These are often physical or emotional disabilities (Texas Education Agency, 2017b).

*Special Education*. Students classified as Special Education meet the definition of disability outlined in the Individuals with Disabilities Act (IDEA). These are usually learning disabilities (Texas Education Agency, 2017b).

*Socio-Economic Status (SES)*. For this paper, Socio-Economic Status will refer to students categorized as Economically Disadvantaged, which generally means that they qualified for free or reduced-cost lunch under federal guidelines.

## Overview of Chapters

By examining the characteristics of a cohort of students in one district in their journey through high school, this study examines which students take the AVID elective class and, of those, which ones leave AVID. The evidence is clear that fewer students are in AVID during their

senior year than their freshmen year, but it is not clear who is leaving (AVID Center, 2016). By looking for trends in the students that join and leave AVID, I will find a description of the AVID student that is most likely to leave AVID before their graduation from high school. This could be useful for recruiting and retention in schools with AVID systems.

In chapter two of this study, I explore the limited research that has been done on the topic of attrition in the AVID elective classroom. While there have been a few qualitative studies into why students have left AVID, the rest of the research has been about other aspects of the system. Other research demonstrates the discussion around high school dropout in general, particularly regarding the characteristics that are most likely to affect AVID attrition, such as gender, race/ethnicity, socioeconomic status, and other labels. The conclusion of chapter two is that there is a gap in the research on identifying which aspects are most common in those students that choose to leave AVID.

In chapter three, data collected on one cohort of students from a suburban school district in Texas is discussed, as well as the research process, design, and instrumentation that will be used. The first research question seeks to identify those characteristics that are most strongly correlated in the students that choose to exit AVID. Thus, a correlation analysis will be used to determine which factors stand out as most likely to be significant. The second research question will then seek to determine the strength of these factors in identifying students likely to leave. Logistic regression will be utilized to show the relative strength behind each factor as a predictor of a student staying in AVID or leaving before the end of their high school years. In addition, combinations of factors will be analyzed to determine the interact of these factors as predictors. Chapter four will contain the results of the statistical analysis, and chapter five will summarize the findings, conclusions, and recommendations of the study.

# CHAPTER TWO: LITERATURE REVIEW

## Research on AVID

While AVID has been in existence as an educational program for over 35 years, there is surprisingly little research available about it. While at least 60 dissertations have been focused on the work of AVID, they generally refer to less than 30 scholarly articles written on the topic of AVID itself. In fact, of this limited group of research articles, no less than 15 were written by a group of researchers at the University of Texas Rio Grande Valley (formerly the University of Texas Pan American).

Sometimes AVID is mentioned in a list of educational programs, but it is very rare that AVID is a focus of the study. Within this small body of writing, almost all the studies are qualitative in nature, attempting to assess perceived value and college readiness from AVID. Few studies have used quantitative data in a course of mixed-method studies. These studies have analyzed relevant data and surveyed students for perceived college readiness, to measure the effectiveness of the AVID system (Black, Little, McCoach, Purcell, & Siegle, 2008; Huerta, Watt, & Butcher, 2013; Oswald, 2002; Watt, Huerta, & Alkan, 2011). While these studies used some quantitative methods in their studies, none of them were focused specifically on student retention in the AVID system.

Among the quantitative studies, one of the original works was completed in 2000 by Larry and Grace Pung Guthrie. This study had two “strands”, focusing on the impact of AVID on students while they were in high school, and the impact of AVID on students while they were in college (Guthrie & Guthrie, 2000). Guthrie’s work (2000) was used in a study of the impact of AVID on college students that was conducted by Watt, Butcher, and Ramirez (2013). While they did examine retention rates and GPA, the students were enrolled in a college class based on a

version of AVID for institutions of higher education. Huerta, Watt, and Reyes (2013) explored how AVID contributed to the success of former high school AVID students in their first year of college. They compared high school and college transcripts to measure success. Of note, this study used binary logistic regression to validate predictors of students' college success. Similarly, Huerta and Watt (2015) also examined the impact of AVID by studying first-year college students who had formerly been in AVID in high school. While these studies were quantitative in nature, they were based on students that were already in college (Watt, Butcher, & Ramirez, 2013; Huerta, Watt, & Reyes, 2013; Huerta & Watt, 2015). Other studies explored AVID's professional development as an aspect of teacher leaders, which also does not directly address the focus of this research (Watt, Huerta, & Mills, 2009; Watt, Mills, & Huerta, 2010).

Several qualitative case studies have been conducted, including studies on the implementation of AVID as a "bottom-up" innovation and as a "top-down" policy (Hubbard & Ottoson, 1997), the influence of AVID on racism and educational reform (Hubbard & Mehan, 1999), the best practices in AVID (Guthrie & Guthrie, 2002), the effectiveness of AVID as a Comprehensive School Reform design (Watt, Yanez, & Cossio, 2002; Watt, Huerta, & Cossio, 2004; Watt, Powell, & Mendiola, 2004; Watt, Powell, Mendiola, & Cossio, 2006 ), a comparison of AVID to GEAR UP, as well as a follow up study (Watt, Huerta, & Lozano, 2007; Lozano, Watt, & Huerta, 2009), the impact of AVID on Mexican American students in college (Mendiola, Watt, & Huerta, 2010; Slavin & Calderon, 2001), the use of AVID in community colleges (Watt, Huerta, & Alkan, 2012), and the effectiveness of AVID in providing cultural capital to low-income students (Bernhardt, 2013). However, none of these studies contributed to the quantitative study of who is leaving AVID during the high school years and thus do not relate to the current study.

One qualitative study did look at retention in AVID and has been mentioned previously. Watt et al. (2008) studied four high schools in California and four high schools in Texas. They conducted focus groups in each school, examining factors like schedule conflicts, teacher perceptions, political and academic struggles within the school, and various relationship connections. They found that relationships between students and each other and between students and the teachers had the largest impact on how long a student remained in AVID. An interesting finding in the study was that students in Texas who did not enroll in AVID for their senior year most often reported that they felt like they were prepared for college and no longer needed AVID, while students in California who did not return for their senior year in AVID had removed from the program due to low grades in AVID or in other classes (Watt et al., 2008).

Thus, the amount of research done on the AVID system is very limited, and most of that research is qualitative in nature. There have been no quantitative studies done about the profile of the student that most likely to drop out of AVID. This leaves a hole in the literature regarding a very serious problem. How can the attrition rate in high school AVID systems be addressed if there is no clear data on who is leaving and what qualities those that leave the class have in common?

Research does demonstrate ways that AVID impacts teachers and students. For instance, AVID students have shown higher retention rates and persistence rates in college than their peers, with far narrower gaps between ethnic and racial groups than average (AVID, 2016; Mehan, Hubbard, & Villanueva, 1994; Walker, Jurich, & Estes, 2001; Watt, Huerta, & Alkan, 2011). Students continue to use the strategies taught in AVID, such as Cornell note-taking techniques, when they attend college, which reflects a perceived value of those strategies by AVID students (Huerta, Watt, & Reyes, 2010; Mendiola, Watt, & Huerta, 2010). Secondary schools with strong

AVID implementations show significant improvements in academic performance, Advanced Placement course enrollment and completion, and college enrollment, while showing decreases in dropout rates (Hammond, Linton, Smink, & Drew, 2007; Hooker & Brand, 2009, Martinez & Klopott, 2005). In addition, AVID can be a vehicle to open communication between administrators and teacher leaders which can lead to improved academic success for all students (Mills, Huerta, Watt, & Martinez, 2014), and schools with strong AVID implementation have shown to have better perceived climates and culture by the faculty (Watt, Huerta, & Mills, 2010).

The fact that AVID has been shown to be beneficial to students underscores the need to find answers to the question of attrition in AVID during the high school years. Finding out who is dropping out of AVID can help lead to changes that might keep more students in AVID longer, for them to receive these benefits. With the relatively small amount of research that has been done on AVID, especially regarding student attrition during the high school years, it may be helpful to examine the research in related areas. For instance, it is possible that there may be similarities between the students that drop out of AVID and the students that drop out of high school or college. Since AVID is a college preparatory system in secondary schools, looking at high school and college attrition rates may shed some light on which students may choose to leave AVID during their high school years. Understanding the characteristics associated with high school dropout may point to similar factors that could be isolated as predictors of attrition in AVID. If there are common characteristics in these groups of students, it could also indicate larger problems in the education system which may cause certain groups of students to not only leave the AVID elective class but to leave behind their education entirely. This the following research is focused on potential predictors of high schools and college dropouts, which could

also potentially be predictors of AVID dropout, such as gender, race/ethnicity, home language, and special labels.

## Drawing Upon High School and College Dropout Studies

In examining high school dropout numbers, in 2009, 8.1% of 16- through 24-year-olds in the U.S. were neither enrolled in high school nor held a diploma. This measure is known as a status rate. During that year, 3.4% of students who started the year in school dropped out before the end of the year. This measure is known as an event rate. (Chapman, Laird, Ifill, & Kewal-Ramani, 2011; Wood, Kiperman, Esch, Leroux, & Truscott, 2016). When looking at potential dropout factors, there are several different definitions and criteria to consider even when trying to determine which data is most accurate. Typically, dropouts are measured as status rates or event rates, because longitudinal measurements (following a set of students and measuring the dropouts each year) can be complicated and expensive (Wood et al., 2016). When examining longitudinal data, Wood and colleagues (2016) found that academic achievement, grade retention, sex, socioeconomic status, and extra-curricular involvement were strong indicators for a student dropping out. On the other hand, race/ethnicity, special education status, country of birth, and English as a second language were not strong markers.

In looking at those rates, data from the National Center for Education Statistics indicates that there are differences in high school dropout rates, based on gender, race/ethnicity, socio-economic status, and nationality (Kena, et al., 2016). Heckman and LaFontaine (2010) contend that the Census data, which the National Center for Education Statistics uses, is the most accurate when compared to measures of student dropout used by other organizations, such as the Common Core Data. However, a meta-analytic study (Bowers, Sprott, & Taff, 2012) shows, through an ROC analysis of 36 studies around high school dropout factors, that while some

factors are very specific, they may not be every accurate, due to mitigating circumstances, while other factors, like teacher-assigned grades, may be more accurate as a predictor but less easy to define statistically. In his book, *Dropping Out*, Rumberger (2011), states that there are four domains of individual predictors for high school dropout. They are educational performance, behaviors, attitudes, and background.

Studies, (Battin-Pearson, et al., 2000; McCready, 2014; Watt, et al., 2008) have indicated that academic achievement is the key indicator in dropouts, not only in high school rates, but within AVID as well. McCready (2014) also indicated that attendance rates are a strong predictor in AVID elective classes. However, Battin-Pearson, et al. (2000) showed that when academic performance was reflected as a mediating factor, variables like behavior and low SES became much stronger predictors of dropout in high school, while McCready (2014) felt that after taking out GPA and attendance, other demographic variables were not strong predictors of dropping out of AVID. Thus, it will be important to account for academic achievement in the analyses performed for this study to more clearly illustrate its significance in AVID attrition, particularly in relation to other descriptive factors.

**Gender**

National data from 2014 indicates that the percentage of males between 16 and 24 who are not enrolled in school or have a high school diploma (GED or otherwise) is around 7.1%. In that year, 5.9% of females in that age range were also considered dropouts (Kena, et al., 2016). This would seem to show that males are 20% more likely to drop out of high school than females. However, Rumberger (1995, 2008) found, after examining over 200 studies, that no consistent correlation could be drawn between gender and dropout rates, especially when controlling for issues like family and academic background. Furthermore, when looking at data

controlled for those factors, it appeared that females might be slightly more likely to drop out. Suh, Suh, and Houston (2007) conducted a logistic regression on data from the U.S. Bureau of Labor Statistics and concluded that gender was not a significant predictor of students dropping out of high school. Some research indicates that gender within an ethnic group has a larger impact, while other would suggest that gender in relation to urban or rural settings is more significant (Crowder & South, 2003; Lichter, Cornwell, & Eggebeen, 1993; Rumberger, 2008).

Doll, Eslami, and Walters (2013) pointed out in their meta-analysis that differing instruments used in studies made analysis of gender issues around reasons for dropping out difficult to validate. For instance, in one study, men were given the choices of "No particular reason" and "Military service" for their reason for dropping out but those choices were not give to women. Women, however, could select "Pregnancy" which was obviously not an option for the men to select.

Severiens and Ten Dam (2012) did an analysis of Dutch census data to determine that men were more likely to drop out of college programs that were mostly female-dominated. This can be connected to studies that showed that women performed better in college programs that had higher percentages of females (Beekhoven, De Jong, & Van Hout, 2003; OECD, 2008). While Severiens and Tan Dam (2012) did explore the possible factors behind the phenomenon of men having a higher attrition rate in female-dominated fields, it become difficult to isolate a cause. This may have bearing to the current study if it can be shown that the loss of boys after the ninth-grade leads to more boys leaving AVID in the upper grades because the class becomes more female-dominated.

**Race/Ethnicity, and National Origin**

A second issue often considered in looking at dropout rates is race/ethnicity. When comparing racial and ethnic groups in high school, Black students are about 50% more likely to drop out than White students (7.4% compared to 5.2%), and Hispanic students are twice as likely to drop out as White students (10.6% compared to 5.2%) (Kena, et al., 2016). In addition, it appears that students of Guatemalan, Honduran, and Salvadoran descent (14.9%-28.7%) are much more likely to drop out of high school than those from Costa Rica, Panama, and South American countries (1.8%-7.3%) (Kena, et al., 2016). Beyond the subgroups of the Hispanic population, the impact of their location of birth is also notable. Hispanic students born within the United States have a 7.6% dropout rate, while those born outside of the United States have a 20.8% dropout rate. For White and Black students, not only are the dropout rates based on nativity within 2 percentage points, but those born in the United States are slightly more likely to drop out than those that were born outside of the U.S. (Kena, et al., 2016).

One predictor of high school dropout is enrollment in rigorous high school courses, such as Advanced Placement or honors courses, while in high school. Hispanic students are less likely than any other ethnic group to take advanced courses (Cates & Schaefle, 2011). In addition, because they are more likely to have grown up in a house where their parents do not have college degrees, Hispanic students often lack the cultural capital of knowing the process that leads to college enrollment, as well as the norms and expectations of the college admission process. Hispanic students also tend to score lower than White students on standardized college entrance tests, which could be a result of linguistic differences between them and their White peers. This is another shortage in cultural capital that makes it more difficult for Hispanic students,

particularly those of lower socio-economic status, to be accepted into and succeed in college than their White peers (Cates & Schaefle, 2011).

However, research indicates that when you control for other factors, such as income or school-related factors, the difference between the racial and ethnic groups may be much smaller or even non-existent (Wood, et al., 2016). Bradley and Renzulli (2011) found that while socio-economic status seems to account for the differences in the Black and White dropout rates, for Hispanic students, there appears to be a cultural "pull" to leave school for both males and females. Thus, the differences in race/ethnicity may reflect socioeconomic differences, or other inequities, among ethnic groups in the United States, rather than true educational gaps.

In combination with race/ethnicity, gender can have an effect as well. For instance, female Hispanic students often have different social, cultural, and educational expectations than their male counterparts (Peguero, Bondy, & Shekarkhar, 2017). Thus, they often have different educational experiences. This could contribute to why Hispanic females have high educational aspirations and yet have lower high school graduation rates than White females (Peguero, Bondy, & Shekarkhar, 2017). What is interesting for this study is that Hispanic females seem to be the group least likely to drop out of AVID. Perhaps there is a connection to being given the skills to meet their own educational goals, which may not be provided by their culture.

**Socioeconomic Status**

In 2014, the dropout rate for students from the lowest quarter by income level was five times greater than for high-income students (11.6% compared to 2.8%) (Kena, et al., 2016). In addition to income, any lack of resources, such as intact families, emotional support, or social acceptance, can make a student much less likely to complete their high school education (Pharris-Ciurej, Hirschman, & Willhoft, 2012). In fact, when socioeconomic factors are

controlled in analysis, the other factors, such as race/ethnicity, gender, and other demographics, have much less of an impact on the results (Gruskin, Campbell, & Paulu, 2011). Low-income is often connected to drop out rates, but it is unclear if this is merely correlation or cause.

**Language Spoken at Home**

Strongly connected to ethnicity for Hispanic students is the fact that many of them do not speak English as their primary language at home. For many of these students, they do not receive academic support at home because of their parents' limited English skills. This is especially challenging when the students are the first generation to complete high school or attend college (Olivos & Mendoza, 2009; Zalaquett, 2006). Many Hispanic parents feel misunderstood when trying to become involved with the educational system. They do not understand the expectations of the school system and struggle with communications that are received in English. They often find that educators try to simplify things due to the language barrier and this leads to additional confusion. Sometimes there are differences in values that cannot be expressed clearly without a common language, and students are left in between (Hill & Torres, 2010).

**Limited English Proficiency / English as a Second Language**

Related to the issue of parents whose primary language is not English is the fact that many students, particularly immigrants, did not learn English as their first language. Within education, there is a wide range of labels and terms used to identify these students and the services that support them (Webster & Lu, 2012). Per the Texas Education Agency (2017a), students classified as LEP are those with limited English proficiency, while ESL is a set of curriculum and services offered to those students for whom English is not their primary language. Thus, in this study, students can be marked as LEP but not receiving ESL services or be marked as ESL, even though they are technically not LEP.

Of the students identified as LEP in the United States, 71% speak Spanish as their first language. The second most common language is Chinese with only 4% of LEP students. In Texas, where this study takes place, 90% of LEP students speak Spanish while 2% speak Vietnamese (Hwang, Lawrence, & Snow, 2017; Soto, G., Hooker, & Batalova, 2015). Among Hispanic students, almost 40 percent of dropouts struggle with English proficiency (Olivos & Mendoza, 2009). While it is evident that LEP students graduated at a lower rate than English proficient students, it is difficult to separate that one identifier from the factors of ethnicity and socioeconomic status, since many LEP students are low-income Hispanic students (Heilig, 2011).

LEP students frequently have trouble on standardized tests, including high school exit exams and tend to have higher dropout rates than other groups that fail those exams the first time. There are several factors that could lead to this, including the difficulty with the language making a successful re-test seem less likely (Callahan & Humphries, 2016; Ou, 2010; Pyle, Pyle, Lignugaris/Kraft, Duran, & Akers, 2017). Because of difficulty with all types of standardized tests, not just those focused on language, many LEP students are incorrectly referred for special education, including speech and language services. Educators and specialists, who are trying to determine if the gap is caused by language, speech impairments, or learning disabilities, often find it difficult to determine the underlying cause and thus provide timely support (Kimble, 2013; Pieretti & Roseberry-McKibbin, 2016).

**At-Risk**

The state of Texas defines “At-Risk” as any student who is at risk of dropping out of school for any of the following reasons, including but not limited to: repeating a grade, failing two core classes in a semester, failing a state assessment, being pregnant or a parent, being

homeless, involvement with the corrections system, and having been expelled (Texas Education Code §29.081). Obviously, this is broad category that covers a lot of overlapping characteristics. Because many of these at-risk eligibility factors are indicative of challenges beyond the classroom, it will be both helpful and important to account for this in my analyses, as it is not unreasonable to assume at-risk status associated with AVID dropout in some manner. In addition, some of the categories in this study, such as LEP and ESL, are items which may make a student eligible for the at-risk label, although not all at-risk students are LEP or ESL. This raises concerns about multicollinearity in the regression analysis which will be address by calculating variance inflation factors (VIFs), a process further described in Chapter 3.

**Gifted and Talented**

The Texas Education Agency (2017c) defines Gifted and Talented as a student who excels based on age, experience, and environment. This high-performance level can be exhibited in intellectual, creative, or artistic area. It is also possible to stand in leadership or a specific academic field. Often, when a student who is labeled as gifted drops out, it is because they are bored with the work that has been assigned, or they faced a personal challenge and found no support from the school system (Hansen & Toso, 2007). Many of these students obtain a high school equivalency certificate and many attend college (Hansen & Toso, 2007). Renzulli and Park estimate (2002) that about 5% of students who are labeled as gifted drop out of high school. Almost half of those are in the lowest quartile of socioeconomic indicators, and a large percentage came from homes where the parents did not complete high school (Renzulli & Park, 2002).

**Special Education / 504**

Students may become eligible for Special Education services for many reasons, including physical, intellectual, emotional, and social disabilities. In general, students classified as Special Education have a higher dropout rate than the average student. Specifically, students with emotional and behavioral disorders have higher dropout rates than other Special Education students (Wood, et al, 2016). Special Education support is generally guided by the federal Individuals with Education Act (IDEA), while a civil rights statute, known as Section 504 of the Rehabilitation Act of 1973, helps to eliminate barriers that might prevent a student from learning. While IDEA often provides more services to students with disabilities, Section 504 strives to maintain equal access for all students (deBettencourt, 2002; Rosenfeld, 1996).

**GPA / AVID Grade**

Cumulative grade point averages (GPA) have been used in several dropout prediction models, and in high schools, low grades tend to predict dropout likelihood (Gleason & Dynarski, 2002). In fact, Eckstein and Wolpin (1999) found that lower cumulative GPAs indicated earlier grades for dropping out. Not only is a student with a low GPA likely to drop out, but students with the lowest GPAs will most likely drop out first. By extension, a low grade in the AVID class should also be an indicator that a student is more likely to drop out of AVID. While GPA measures academic performance in all classes, the student's grade in AVID measures their academic performance in that class. In many ways, the student's grade in AVID is an indicator of how much they are committed to the work necessary to be successful. However, factors other than academic issues seem to have an impact on GPA. For instance, many schools have a difference in GPAs between ethnic and gender groups, which may have several explanations (Morris, 2012; Yeh, 2017).

### Summary of Dropout Studies

In examining the research conducted on high school and college dropout rates, one thing that becomes clear is that that is not a simple issue to define or predict. Much of the research conducted has challenged the accuracy of various methods of tracking dropouts, and many of the predictors that are shown to be significant in one study are explained as less significant in another. For instance, the differences between the reasons that men and women give for dropping out may be explained by problems with the surveys used (Doll, Eslami, & Walters, 2013). Differences in dropout rates for Black or Hispanic students compared to White students may be related to other factors, such as socioeconomic status (Wood, et al., 2016). In fact, the overlap of gender and ethnicity has shown to have a separate impact than either factor alone (Peguero, Bondy, & Shekarkhar, 2017). In addition, the impact of language and educational labels cannot be overlooked.

With these things in mind, it is important to consider that looking at any one indicator as a predictor of dropout from the AVID system may be insufficient. In fact, looking at several factors in isolation may not be as effective as examining how those indicators intersect and interact with each other. This is a concept behind the theory of intersectionality, which is the framework for this research.

## Theoretical Framework

Researchers have related many individual characteristics to dropout propensity (Bowers, Sprott, & Taff, 2012; Rumberger & Lim, 2008). Specifically, researchers have considered the unequal rates for either dropping out or obtaining a diploma or degree, based on demographic differences, such as gender, race/ethnicity, and socioeconomic status. Furthermore, when looking at combinations of factors, the information becomes more complex and revealing (Alexander,

Riordan, Fennessey, & Pallas, 1982; Lareau, 2003). Along these lines, the concept of intersectionality suggests that gender, race/ethnicity, and socioeconomic status should not be examined purely in isolation, since the combinations seem to yield results that are unique from the individual factors (Williams, 2009).

This study will use the theory of intersectionality, which flows from critical race theory and was first used analytically by Kimberle Crenshaw in the late 1980s (Crenshaw, 1989, 1991; Davis, 2008; Ragin & Fiss, 2017). Per Davis (2008), "'Intersectionality' refers to the interaction between gender, race/ethnicity, and other categories of difference in individual lives, social practices, institutional arrangements, and cultural ideologies and the outcomes of these interactions in terms of power." (p. 68). For instance, Crenshaw (1991) used intersectionality to describe the fact that a Black woman often faces different discriminations than a Black man or a White woman when it comes to areas like employment, politics, and violence. Thus, only looking at the categories of race/ethnicity or gender may not provide a complete picture of the experiences of a Black woman (Crenshaw, 1991). If in this study, I were to investigate the influences of gender or of ethnicity in separation, I could potentially overlook a finding such as one that holds Hispanic females in AVID might be more likely to drop out of AVID than White females, or that White males may be more likely to drop out than White females. Even if GPA is shown to be a strong predictor, is it the same for a male as a female? Is GPA as strong of a predictor for an ESL student as an "at-risk" student? Only by embracing intersectionality and considering the combined influences of these characteristics, could such questions be answered. On the other hand, it remains important to look at each characteristic individually as a predictor so that strong interactions can be separated from combinations where one of the characteristics is a strong predictor on its own.

The tenets of intersectionality include what is known as “nonadditive intersectionality”. This is the idea that the effect of the sum of the factors is significantly greater than the impact of the individual factors. In other words, being a Hispanic male is more than just being Hispanic and being a male. Another tenet is known as “switch intersectionality” and refers to the idea that people are often seen as the intersection of multiple factors rather than being part of the individual characteristic groups that fit a specific demographic (Bright, Malinsky, & Thompson, 2016).

Intersectionality has been used in qualitative research and pedagogy (Asher, 2007; Grant & Sleeter, 1986; West & Fenstermaker, 1995; Winkle-Wagner, 2008). However, the use of intersectionality in quantitative research is more limited (Alexander, Riordan, Fennessey, & Pallas, 1982, Thompson, Gorin, Obeidat, & Chen, 2006). McCall (2005) believes this can be attributed to the idea that qualitative research often seeks to find the complexities of social situation, while quantitative research tends to search for common patterns and singularities. Specifically, this study will use intersectionality as basis for the analysis through logistic regression. Ragin and Fiss (2017) describe most multivariate analysis as a competition between variables, rather than looking at ways in which those factors may interact with each other. Intersectionality theory is based on the idea that people exist in multiple descriptive categories. Thus, analyzing just one aspect or factor does not give a clear picture of the situation (Bright, Malinsky, & Thompson, 2016). Interaction and intersection are often used interchangeably in research on logistic regression. For this study, interaction will refer to the relationship between the predictor and the outcome variable as effected by the independent variable, while the term intersection will refer to the combining of independent variables to determine the unique values as differentiated from individual independent variables.

## Chapter Summary

Relatively speaking, there is very limited research on AVID. There has been research done from qualitative and mixed-methods perspectives showing that AVID has a significant positive effect on teachers and students. A few studies have even been done about why students are leaving AVID during their high school years. However, almost nothing exists in the literature about who is leaving AVID and what common characteristics might exist amongst leavers.

Given the limitations of existing research, works reviewed for this paper included literature around the predictors of high school and college dropouts, particularly regarding gender, race/ethnicity, language spoken at home, ESL/LEP status, socioeconomic status, At-Risk and Gifted labels, Special Education and 504, GPA, and other academic factors. These items, which have been shown to be predictors of high school and college dropout will hopefully shed light on areas that need to be examined in the AVID dropout research.

There is a need for quantitative research into identifying which characteristics of students point to who is most likely to leave AVID during high school. It is particularly important to consider the interaction of multiple characteristics which may be more informative than simply isolating individual qualities. These factors can be isolated to use as predictors for future decisions around AVID recruitment, program design, and future studies.

# CHAPTER THREE: RESEARCH METHOD

## Introduction

The purpose of this study is to identify students that are most likely to drop out of AVID during their high school years. More specifically, this study will determine what factors are most strongly correlated with AVID attrition.

The study will examine the following questions:

1. What characteristics of students who enter the AVID system as freshmen are most strongly correlated with dropping out of AVID before high school graduation?
2. What are the relative strengths of these characteristics in impacting the odds of a student dropping out of the AVID system during high school?

Thus, a sample group of AVID students needs to be examined in order to determine which characteristics are consistent in those students that exited the program. If those characteristics could be identified, it might be possible to isolate factors predictive of AVID dropout. In addition, isolating those factors might lead to finding systemic issues that make it difficult for certain students to remain in AVID. Since studying every present and former AVID student around the world would be logistically prohibitive, a sample was chosen. Since the factors to be considered were markers that are consistently recorded by school districts, it made sense to use a school district's database as a source of information about the population. Therefore, this study is quantitative in nature and based on a statistical analysis of data from one public school district.

## Setting

To find a district that would be willing to share their data, three districts in Texas with large AVID systems were contacted with a request for access to their data. After a meeting with

district leaders, one district was willing to share their data for this study (see Appendix A). The research site under study is a large urban/suburban, public school district in Texas with over 60,000 students. There are 6 traditional high schools with over 19,000 high school students between them. Each of the high schools has an AVID system, and roughly 1,700 students were enrolled in the high school AVID elective class in the 2014-2015 school year. This means that roughly 9% of the high school students in this district are directly involved in the AVID system. The district is very ethnically diverse with approximately 40% of the students listed as Hispanic, 25% listed as Black, 25% listed as White, 7% listed as Asian, and 3% listed as Other. Around 55% of the students in the district receive free or reduced-price lunches (AVID Center, 2016). Eligibility for free and reduced-price lunches is often used as a measure of a student's socioeconomic status in education al research (Harwell & LeBeau, 2010).

AVID began in this district in 2001 at two middle schools. One high school started an AVID elective class on their campus in 2003, and another high school started AVID in 2005. In 2007, the district decided to have AVID on every traditional secondary campus in the district. In 2013, the district added AVID Elementary to 9 of its elementary campuses. AVID has been a strong part of the district for over 10 years, with its initial beginnings in the district over 16 years ago, with AVID being a part of the culture of 25 campuses throughout the district. Over 700 of their current teachers have been to an AVID Summer Institute or Path training (AVID Center, 2017).

## Data

The Texas Education Agency requires districts to collect and report certain data on each of its students, including demographics and academic performance. Financial, organizational, and personnel data is also included. This data is collected electronically through the Public

Education Information Management System (PEIMS). PEIMS data collection has a standard set of definitions, codes, and procedures for the entire state (Texas Education Agency, 2017d).

The district released the student PEIMS data for the study with no personal identifiers; the names were replaced with numbers, and no information was given that would allow the data to be traced back to a specific student. With the data shared in this manner, obtaining official permission from the Institutional Review Board of my institution was not required, since they agreed this study and data did not meet the definition of human subjects research (see Appendix B). The data was delivered in several files and stored on a security-enabled computer.

The data that was shared from the district contains descriptive measures including gender, race/ethnicity, English language status, home language, and free or reduced-price lunch eligibility. The data also reports whether students are eligible for 504 services, their gifted and talented status, special education eligibility, and if the student is considered at-risk. Finally, the data indicates the students' GPA.

The data was provided by year for one district-wide cohort of high schoolers that began their freshman year in 2011-12. Records for 5,614 ninth graders were provided for the school year 2011-2012. Records for 4,832 tenth graders were provided for the school year 2012-2013. Likewise, records for 4,297 eleventh graders and 4,411 twelve graders were provided for school years 2013-2014 and 2014-2015, respectively. By having the data for one cohort of students over their four years of high school, although it is not addressed in this study, it is possible to see factors such as what year a student is more likely to leave AVID.

## Participants

Through this study, I will only look at students that have been in the district for all four years of high school. This will eliminate those students who appear to drop out of AVID when,

in fact, they left the district. Thus, the study will focus on the students who join AVID as freshmen and who remained in the district for all four years of high school. Of the 5,614 freshmen in the district in the 2011-2012 school year, 3,136 were in the district for all 4 years of high school. Of those students, 431 joined AVID at some point during their high school careers, but only 382 joined as freshmen. Thus, those 382 students will be the focus on this study.

In Table 1, the categories of information provided by the district are listed, along with the percentages of students that fit each category, for the entire district and for those joined AVID in the ninth grade. The total number of students in the district includes the students that are in AVID. The table shows the diversity of this district's population. In comparison, more students in AVID tend to be Black and Hispanic than the average for the district. This is not surprising since being from a race/ethnicity that is underrepresented in higher education is a selection criterion for AVID. They also have a higher percentage of those that come from non-English speaking households, are economically disadvantaged, and labeled as at-risk. Since AVID seeks to recruit students who are first generation college students, these factors would appear to be consistent with AVID selection criteria. It is also worth noting that the AVID class has fewer males and those students labeled as LEP, ESL, Gifted/Talented, and Special Education than the average. These differences may be significant when examining the results from the analysis.

Table 1

*Comparison of All Students in District to Those in AVID in Ninth Grade*

| Category | Label | All Students | Students in AVID in Ninth Grade |
|---|---|---|---|
| Sex | Female | 50.4% | 53.9% |
| | Male | 49.6% | 46.1% |
| Race/Ethnicity | Asian | 9.0% | 7.3% |
| | Black | 21.2% | 29.1% |
| | Hispanic | 37.0% | 50.0% |
| | White | 30.5% | 11.5% |
| | Other | 2.3% | 2.1% |
| Eco. Dis. | Yes | 54.6% | 75.4% |
| Home Language | English | 66.2% | 53.9% |
| | Other | 33.8% | 46.1% |
| LEP | Yes | 11.7% | 9.4% |
| ESL | Yes | 10.7% | 7.6% |
| At-Risk | Yes | 47.8% | 49.2% |
| Gifted / Talented | Yes | 14.0% | 9.2% |
| Spec. Education | Yes | 6.6% | 0.8% |
| Section 504 | Yes | 2.6% | 2.6% |

## Variables

I have decided to employ a correlational research design, which is highly useful in studying many problems in education and the social sciences. One advantage of this type of research design is the ability to analyze the correlation that several variables might have to a

specific pattern of behavior. In addition, the degree of the relationship within those variables can be measured. Generally, correlational research designs are used to explore relationships between variables or to predict outcomes based on patterns that exist between the variables (Gall, Gall, & Borg, 2007).

The dependent variable in this study represents the outcome of primary interest – dropping out of AVID. The study will use a bivariate analysis to seek the correlations between each of the independent variables and AVID dropout. In addition, the strength of the impact of each independent variable on the dependent variable will also be considered using a multivariate analysis.

The independent variables selected for this study are based upon the high school dropout factors reviewed in chapter two of this study, and are determined by the data provided by the district about each student.

**Gender/Sex**

The student's sex, male or female, is represented as a dichotomous variable (1=male, 0=female).

**Race/Ethnicity**

Since race and ethnicity are not distinguished and are combined in the data provided by the district, these items will be covered in one variable, labeled "race/ethnicity". Throughout the rest of the paper, this variable will be referred to in this way. The race/ethnicity of each student is marked as a set of dichotomous variables as follows:

Asian – 1=yes and 0=no

Black – 1=yes and 0=no

White – 1=yes and 0=no

Other – 1=yes and 0=no

Since the students labeled as Hispanic was the largest group in the study, this group was used as the constant and comparison were made between this group and the others.

**Language Spoken at Home**

The primary language spoken at home for each student is named in this category. 33 different languages are named, and a category exists for Other languages. Among AVID students in this district, about half of the students speak English. Thus, this will be treated as a dichotomous variable with 1=not English and 0=English.

**GPA**

The Grade Point Average (GPA) for each student in listed in this category. The district uses an academic (ACA) GPA system which awards 4-6 points for a C, 7-9 points for a B, and 10-12 points for an A. In addition, an "Honors" level course receives an extra 3 points, which means a student could earn from 7-15 points in one of these courses. The GPA scores, which are continuous interval values, were standardized to bring the differences within the 0 and 1 values of the other variables. This allows for the odds ratios to be consistent in measuring effect size. Examining a student's cumulative GPA is a way to see if the student's grades in other classes impacts their decision to stay in AVID for all four years. Since the GPA used in this analysis is from the first semester of the freshmen year, if it is shown to be a strong predictor, it will useful for making changes after the first year in AVID.

**AVID Grade**

Like the GPA, the grade assigned to each student in the AVID class at the end of the first semester is standardized. While this not a dichotomous variable, the values used are scaled to lessen the impact in the logistic regression, based on scale as a continuous interval measurement. This is the grade in the AVID class at the end of the first semester. This variable may be an

indicator of if AVID students are really connecting with the AVID elective class and getting off to a good start in the class. It would be reasonable that a student who struggles in the beginning semester might not stay in AVID in the long term.

**Other Variables**

All the remaining variables (Economically Disadvantaged, LEP, ESL, At-Risk, Gifted/Talented, Special Ed, and Section 504) are labels assigned to the student by the school district. These are all assigned a dichotomous variable of either Yes (1) or No (0).

## Technique

In determining the common characteristics of students who enter the AVID system and leave before high school graduation, the first step will be to correlate each of the independent variables being considered to the dichotomous dependent variable of whether or not the student drops out of AVID. This will allow a preliminary measure of which characteristics are most likely to be strong predictors in the logistic regression analysis. However, correlational computations will only provide information about each variable's relationship with AVID dropout, in isolation from all other variables. This is an important starting place in that it establishes the relationships between each independent variable and AVID dropout. Further, performing these correlations will allow me to determine the strength of each these relationships (e.g. no, weak, medium, or strong correlation) as well as their statistical significance (or lack thereof). However, to capture the collective influence of the independent variables upon AVID dropout and to understand their relative, predictive strengths, regression analysis must be performed. A Phi-coefficient correlation will be used by the binary variables. This is a measure of association, calculated by taking the square root of the chi-squared divided by the sample size (Everitt & Skrondal, 2010). For the continuous variables of GPA and AVID Grade, a point-

biserial coefficient will be calculated. This coefficient correlation is designed when there is a dichotomous variable and a continuous variable (Glass & Hopkins, 1995).

**Logistic Regression**

As mentioned previously, while simple bivariate analysis can point out some basic differences, a deeper analysis, such as logistic regression, is necessary to determine the relative strengths of these characteristics in impacting the odds of a student dropping out of AVID during high school. Logistic regression is used to determine the relationship between a dichotomous dependent variable and a set of predictor, independent variables (Gall, Gall, & Borg, 2007). Logistic regression is used in attempts to determine a line of best fit to the data; however, since the data is often binary, logistic regression uses a transformation of the outcome, which is called log odds, or logit. This logit is essentially based on the probability of the outcome (Sainani, 2014). Regression methods have become a key in processing this type of analysis, and when the outcome (or response) variable is discrete, logistic regression has become the standard for this type of analysis. Logistic regression makes sense over linear regression when the outcome variable is dichotomous (Hosmer, Lemeshow, & Sturdivant, 2013). Since the decision to leave AVID or remain in it until graduation is binary, it fits the dichotomous dependent variable requirement of binary logistic regression. Logistic regression is often used to establish the probability that a specific outcome will occur (Sainani, 2014). In fact, logistic regression has been used often in studies of high school and college dropout (Alexander, Entwisle, & Horsey, 1997; Ma & Cragg, 2013; Stoessel, Ihme, Barbarino, Fisseler, & Sturmer, 2015; Vickers, 2007). This type of analysis would help to make it clear which of the independent variables are the most significant in AVID dropout.

Stoltzfus (2011) suggests that there are four assumptions that must always be met in the use of logistic regression. The first is independence of errors (or independence observations), which holds that the outcomes for each sample group are unique and not duplicated. The second assumption holds that there should be a linear relationship between any continuous independent variables and the outcomes found after the logit transformation. The third assumption is the absence of multicollinearity among independent variables. It is important that the variables not include redundant data within the model. The final assumption mentioned by Stolzfus (2011) is a lack of outliers which strongly affect the outcome and thus the accuracy of the model.

To address multicollinearity, variance inflation factors (VIFs) will be calculated for all independent variables. VIFs are used to interpret the effects of the proportion of variance on the estimated regression coefficient for the independent variables. There are several rules of thumb regarding VIFs, but these can often be problematic when variables are eliminated or combined to reduce the collinearity and, in turn, create larger problems than they solve (O'Brien, 2007). Thus, only variables with VIFs over 10 will be considered for transformation or exclusion.

**Formula for the Regression Model**

Linear regression analysis allows two variables to determine if they are related and if the strength of that relationship can be described in an equation. The form of that equation is $Y = \beta_0 + \beta_1 X$ where Y is the dependent variable and X is the dependent variable. $B_1$ is the change in Y for every one unit change of X. This is also known as the slope. For multiple regression, the equation becomes $Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k$ (Stage & Wells, 2014). Since the dependent variable under study is dichotomous, I will be employing logistic regression, the formula for which is as follows:

$$\text{Logit } Y_{dropout} = \beta_0 + \beta_1 X_{male} + \beta_{2\text{-}5} X_{race/ethnicity} + \beta_{6\text{-}9} X_{male \times race/ethnicity} + \beta_{10} X_{ecodis} + \beta_{11} X_{homelang} + \beta_{12} X_{LEP} + \beta_{13} X_{at\text{-}risk} + \beta_{14} X_{gifted} + \beta_{15} X_{504} + \beta_{16} X_{GPA} + \beta_{17} X_{AVIDGrade.}$$

$\beta_0$ in this formula is the intercept or constant. Each of the other β values represents a separate coefficient, or slope, and is analyzed as a partial derivative. Each predictor is interpreted in terms of its associated coefficient, or rate of change, in relation to the dependent variable (Hilbe, 2015).

**Assessing Model Fit**

The basic concept behind assessing the model fit for logistic regression is to determine how effectively the dependent variable can be predicted using the independent variables. One type of measurement is referred to as a summary measures of fit, which measure the differences between the observed and fitted values. One shortfall of summary measurements is that they may not provide adequate information about individual model components (Hosmer, Lemeshow, & Sturdivant, 2013). Another type of model is based on finding the proportion of the total variation in the model. This is the ratio of the regression sum-of-squares to the total sum-of-squares. This is commonly called $R^2$ (Hosmer, Lemeshow, & Sturdivant, 2013). However, since logistic regression arrives at maximum likelihood estimates through an iterative process, $R^2$ does not apply as a goodness-of-fit approach (UCLA: Statistical Consulting Group, 2011).

To measure goodness-of-fit for logistic regression, several "pseudo" $R^2$s have been developed. They are similar in appearance to a traditional $R^2$, but they function differently (UCLA: Statistical Consulting Group, 2011). Three common "pseudo" calculations for $R^2$ which will be used in this analysis are the Cox-Snell $R^2$, the McFadden $R^2$, and the Nagelkerke $R^2$. Tjur's D is a newer model that is gaining acceptance (Allison, 2013). These are four methods most often reported in statistical software, and all have been reviewed and supported many times,

although the Cox-Snell $R^2$ appears to be better suited to binary logistic regression, while the McFadden $R^2$ appears to be more accurate for multiple regressions (Allison, 2013). Each of these pseudo $R^2$ measures will be reviewed and interpreted in this study.

**Reporting the Model Results**

Hosmer, Lemeshow, and Sturdivant (2013) propose that there are four steps to correct interpretation of the coefficients that are returned by the logistic regression with a dichotomous independent variable. First, the two values of the covariate must be defined. Then, each value must be substituted into the equation. Next, the difference between the two equations must be calculated. The slope coefficient, or logit difference, is the difference of the log of the odds for the two values. Finally, the logit difference is exponentiated to obtain an odds ratio.

The resultant odds ratio in this study can be interpreted as the change in the odds of a student dropping out of AVID, which is associated with a 0 to 1 change in the independent variable. Since 0 will be used for no and 1 used for yes in the coding of dichotomous independent variables, those with odds ratios over 1.0 will indicate a greater likelihood of AVID dropout, holding all other independent variables constant.

**Interpreting Results**

Knowing which factors are the most likely predictors of student attrition in AVID could be helpful in practice in many ways. Not only could it help those that recruit and select students for AVID to be aware of these factors, but more importantly, the sites with AVID could look at the systems and culture of their schools to see if there are causes of these trends. Is there something about the AVID system or AVID at their schools that appeals more to Hispanic girls than to White boys? Is there something that drives away students who are “at-risk” while

rewards those who are “gifted”? Having some clearly defined markers of who is leaving the AVID system will help lead to examining practices that can explain why these differences occur.

## Chapter Summary

The problem of attrition in the AVID system during the high school years is one that has not been fully addressed. This study will examine a cohort from six schools in a suburban Texas school district and identify the common characteristics of students that left AVID during high school. Those characteristics that stand out in the bivariate analysis can be analyzed through logistic regression to determine if they are strong predictors of which students will drop out of AVID. This study will open avenues for future research into why these students are leaving, which could lead to improvement in program implementation and student recruiting.

# CHAPTER FOUR: RESULTS

## Introduction

To determine the identifying characteristics of those dropping out of AVID in high school, and to determine how strongly those characteristics would serve as predictors of future student dropout from AVID, I conducted a series of analyses. The first step was a correlation analysis to determine if significant relationships exist between the dependent variable of dropping out of AVID and the independent variables of race/ethnicity, sex, socio-economic status, language spoken at home, grade in AVID, and cumulative GPA. Additional independent variables include being labeled as LEP, ESL, At-Risk, Gifted/Talented, Special Education, or Section 504. I conducted a second type of analysis using a logistic regression to determine the relative strengths of each of these independent variables as predictors of AVID dropout.

## Descriptive Characteristics of Data Used in Analysis

For this study, it was important to use only data from students who had been in the district for all four years of high school. This would eliminate a student from showing as "dropping" out of AVID when, in fact, they had left the district. In addition, only students who had been in AVID since their freshmen year were included. This simplified the process by eliminating students who joined later. By looking only at students who joined AVID in the ninth grade and who stayed in the district all four years, it became possible to determine which students dropped out of AVID for a reason other than moving. This means that students who left AVID for one year and returned were still included in the analyses as having dropped out. 382 students met the criteria of being in the district for 4 years and were in AVID in the ninth grade. Of these, 168 left AVID before the end of their high school career. In other words, 43.98% of students who started AVID in the ninth grade dropped out of the program at some point during

their high school career. Table 2 compares those who started in AVID to those who stayed in AVID and those who dropped out.

Table 2

*Descriptive Statistics of Who Started in AVID, Stayed in AVID, and Dropped Out of AVID*

| Category | Label | Started (n=382) | | Stayed (n=214) | | Dropped Out (n=168) | |
|---|---|---|---|---|---|---|---|
| | | Freq. | Per. | Freq. | Per. | Freq. | Per. |
| Sex | Female | 206 | 53.9% | 123 | 57.5% | 83 | 49.4% |
| | Male | 176 | 46.1% | 91 | 42.5% | 85 | 50.6% |
| Race/Ethnicity | Asian | 28 | 7.3% | 12 | 5.6% | 16 | 9.5% |
| | Black | 111 | 29.1% | 67 | 31.3% | 44 | 26.2% |
| | Hispanic | 191 | 50.0% | 111 | 51.9% | 80 | 47.6% |
| | White | 44 | 11.5% | 20 | 9.3% | 24 | 14.3% |
| | Other | 8 | 2.1% | 4 | 1.9% | 4 | 2.4% |
| Eco. Dis. | Yes | 288 | 75.4% | 167 | 78.0% | 121 | 72.0% |
| Home Lang. | English | 206 | 53.9% | 103 | 48.1% | 103 | 61.3% |
| | Other | 176 | 46.1% | 111 | 51.9% | 65 | 38.7% |
| LEP | Yes | 36 | 9.4% | 21 | 9.8% | 15 | 8.9% |
| ESL | Yes | 29 | 7.6% | 17 | 7.9% | 12 | 7.1% |
| At-Risk | Yes | 188 | 49.2% | 94 | 43.9% | 94 | 56.0% |
| Gifted / Tal. | Yes | 35 | 9.2% | 23 | 10.7% | 12 | 7.1% |
| Spec. Ed. | Yes | 3 | 0.8% | 0 | 0.0% | 3 | 1.8% |
| 504 | Yes | 10 | 2.6% | 3 | 1.4% | 7 | 4.2% |

In examining the values contained in Table 2, there is a larger percentage of males dropping out of AVID than were in the class during the ninth-grade year. This would seem to indicate that males are more likely to drop out of AVID than females. In addition, White and Asian students, those whose home language is English, and those labeled at-risk or section 504 also seem more likely to drop out of AVID. However, a true correlation analysis needs to be completed to determine if these associations are meaningful in a statistical sense. In addition, a logistic regression analysis will show the relative strength and statistical significance of each of these factors in predicting dropout.

## Correlation Analysis

The first research question posed in this study was, "what characteristics of students who enter the AVID system as freshmen are most strongly correlated with dropping out of AVID before high school graduation?" This question involves determining what characteristics of students who enter the AVID system as freshmen are correlated with dropping out of AVID before high school graduation. To answer this, I performed a series of simple correlation analyses on the data for the 382 students that started AVID in the ninth grade. However, in preparing the final data set, I noticed two distinct factors about the special education students: 1) they represented a very small subgroup in the sample, thus introducing cell size concerns, and 2) that there was no variability in the dropout variable for these students. There were 3 students in the Special Education section to begin and all three dropped out. These can be seen in Table 2. This would mean that Special Education would be a perfect predictor in the logistic regression analysis. Thus, I removed Special Education as a variable in the correlation analysis and the logistic regression analysis.

I determined Phi-Coefficient Correlations for the relationships between each of the binary independent variables and the dependent variable measuring AVID dropout. This did not include GPA or AVID Grade which are continuous. For these two continuous variables, I used a Point-Biserial Coefficient (Glass & Hopkins, 1995). A Phi-Coefficient Correlation is a measure of association, calculated by taking the square root of the chi-squared divided by the sample size (Everitt & Skrondal, 2010). The coefficient is a measure from 1 to -1 with the stronger correlation existing when the coefficient is closer to 1 or -1 (Benesty, Chen, Huang, & Cohen, 2009). The significance of the correlation analysis is measured with a two-tailed significance test, which indicates the probability of being able to reject the null hypothesis that there is no relationship between each characteristic and the dropout variable (Campbell, 2004). The significance level, which is often denoted by $\alpha$, is used to assess a $p$-value. For this analysis, any $\alpha$ (or $p$-value) below .05 is considered significant. This same value will be used for significance in the logistic regression. This a conventional value that is typically selected because this level implies that the null hypothesis will be incorrectly rejected just one in 20 times. This is widely accepted as reasonable evidence that the null hypothesis is wrong (Campbell, 2004). Table 3 shows those results.

Table 3

*Correlation Analysis of Various Characteristics to Dropout*

| Characteristic | Phi Coefficient | Approximate Significance |
|---|---|---|
| Male | 0.080 | 0.116 |
| Asian | 0.075 | 0.145 |
| Black | -0.056 | 0.274 |
| Hispanic | -0.042 | 0.410 |
| White | 0.092 | 0.074 |
| Other | 0.018 | 0.729 |
| Eco. Dis. | -0.069 | 0.176 |
| Not Eng. | -0.131 | 0.010 |
| LEP | -0.015 | 0.769 |
| ESL | -0.015 | 0.769 |
| At-Risk | 0.119 | 0.020 |
| Gifted / Tal. | -0.062 | 0.225 |
| 504 | 0.086 | 0.093 |

| Characteristics | Point-Biserial | Significance |
|---|---|---|
| GPA | -.240 | 0.000 |
| AVID Grade | -.240 | 0.000 |

In examining the Point-Biserial Correlation for each value, two characteristics, AVID Grade and GPA, stand out as having a significance value of 0.000. This indicates that there is a very strong correlation between these two characteristics and the dropout variable. This is

consistent with the literature which expressed a strong correlation between grades and high school and college dropout (Eckstein & Wolpin, 1999; Gleason & Dynarski, 2002).

In the Phi Coefficient Correlation, two other characteristics met the value of $p < .05$. The independent variables representing students whose home language is not English ($\alpha$=0.010) and those considered "At-Risk" ($\alpha$=0.020) have statistically significant $p$ values of < .05. Cohen (1998) identified correlation values around an absolute value of 0.15 as having a medium effect size. The variables of home language ($\alpha$=-0.131) and At-Risk ($\alpha$=0.119) were near that mark, suggesting that each variable has a medium relationship with AVID dropout. Cohen (1998) also identified correlations values around an absolute value of 0.35 as having a large effect size. With correlation values of -0.240, both AVID Grade and GPA could be considered as having a medium to large effect size. Accordingly, I expect that these four characteristics (home language, At-Risk status, AVID grade, and GPA) will be points of interest in the logistic regression analysis.

The logistic regression analysis is an important next step in this study. While the correlation analyses that I have described here provide a view of the one-to-one relationships of each independent variable to the dependent variable, it does not demonstrate the relative strength of these independent variables to one another. The logistic regression analysis will provide a clearer understanding of the power of each of these variables to act as a predictor of AVID drop out in high school.

## Logistic Regression Analysis

The second research question was, "what are the relative strengths of these characteristics in impacting the odds of a student dropping out of the AVID system during high school?". This question involved determining the relative strengths of the various individual-level

characteristics in impacting the odds of dropping out of the AVID system during high school. I approached this question by performing a logistic regression.

**Analysis of Assumptions**

The assumptions for logistic regression (Stoltzfus, 2011), which include independence of errors, the linear relationship between variables, and the absence of outliers, are each demonstrated through the analysis results. However, multicollinearity is addressed before the analysis so that problematic variables can be removed. I calculated variance inflation factors (VIFs) for all independent variables to detect any potential multicollinearity. An exception was made for the race/ethnicity variable since this is a categorical variable recorded into more than three control, dummy variables. This type of variable can (and should) be excluded from VIF analysis (Allison, 2012). These VIF analysis results are displayed in Table 4.

Using the common "rule" of 10 as the cut off for multicollinearity (O'Brien, 2007), none of the VIFs contained a score that is above that. The two highest numbers are for LEP (5.10) and ESL (4.85). Since ESL is a series of services provided to certain students who are determined to be limited in English proficiency (LEP), it is logical that most (if not every) ESL student would also be a LEP student. In fact, in this data set, every ESL student is also a LEP student, but only 80% of the LEP students are ESL. Since the inclusion of both increases the risk of multicollinearity, and because the ESL does not add new information to the analysis, I decided to only use LEP in the logistic regression. The third column of Table 4 shows the independent variable VIFs after ESL was removed. This brings all values to far less than 4, which is considered the more conservative rule of thumb for VIF interpretation (O'Brien, 2007).

*Table 4*

*Variance Inflation Factors (VIFs)*

| Characteristic | Variance Inflation Factors | VIF (with ESL removed) |
|---|---|---|
| Dropout | 1.12 | 1.12 |
| Male | 1.06 | 1.05 |
| Eco. Dis. | 1.20 | 1.20 |
| Not Eng. | 1.38 | 1.38 |
| LEP | 5.10 | 1.28 |
| ESL | 4.85 | -- |
| At-Risk | 1.32 | 1.32 |
| Gifted / Tal. | 1.11 | 1.11 |
| 504 | 1.07 | 1.07 |
| GPA | 1.70 | 1.69 |
| AVID Grade | 1.56 | 1.56 |

**Measures of Best Fit**

Regarding model fit for the logistic regression, I chose to use pseudo $R^2$ measures. Traditional $R^2$ measures, which are used to assess the fit of linear regression, represent the proportion of variability in the dependent variable that is accounted for by the model (Gravetter & Wallnau, 2013). However, because as the name implies, logistic regression is a loglinear model, traditional $R^2$ measures are not appropriate for assessing fit (Hosmer, Lemeshow, & Sturdivant, 2013; UCLA: Statistical Group, 2011). Hence my decision to use pseudo $R^2$ measures for this study. While some of the pseudo $R^2$ measures share similarities with traditional

$R^2$ values, pseudo $R^2$ values are typically not as large as traditional $R^2$ values (McFadden, 1979; Tjur, 2009).

The first pseudo $R^2$ that I calculated was the McFadden pseudo $R^2$. McFadden's measure works by dividing the log of the maximum likelihood value from the current model by the log of the likelihood model with no predictors. This calculated value is subtracted from one to give its pseudo $R^2$ number (Allison, 2013). For this analysis, that value was $R^2_{McFadden} = 0.123$. McFadden (1979) evaluated a number between 0.2 and 0.4 to be an excellent fit.

The Cox-Snell pseudo $R^2$ measure takes the likelihood value with no predictors and divides by the likelihood value for the estimated model. This number is raised to a power of two divided by the sample size. Again, this calculation is subtracted from one (Allison, 2013). For this logistic regression, the value was $R^2_{Cox-Snell} = 0.155$.

The Nagelkerke measure is an adjustment of Cox-Snell made by dividing it by its maximum possible value. This extends the range of possible values to 1 (Smith & McKenna, 2013). For this analysis, the value was $R^2_{Nagelkerke} = 0.208$.

Finally, Tjur's (2009) coefficient of discrimination (also known as Tjur's D) is a fourth pseudo $R^2$ that was used in this analysis. Tjur's D is the difference between the means of the predicted probabilities across all observations falling into each of the two, observed categories of the dependent variable. Compared to the other pseudo $R^2$ calculations, Tjur's D is relatively simple to calculate, has an upper bound of 1.0, and is closely related to the $R^2$ models for linear regression (Allison, 2013). For this analysis, this equated to a value of $R^2_{Tjur'sD} = 0.161$. Although these values for pseudo $R^2$s may not be considered "excellent" fits, they are each comfortably within the realm of acceptability, as they are all approaching a value of 0.2.

**Logistic Regression Data**

Table 5 reflects the data from the logistic regression analysis. It displays the raw coefficient (or $\beta$ ), standard error, odds ratio, and significance ($p$) for each independent variable.

Table 5

*Odd Ratios of Various Characteristics to Dropout Through Logistic Regression*

| Variable | Raw Coefficient | Standard Error | Odds Ratio | Significance |
|---|---|---|---|---|
| Male | -0.090 | 0.332 | 0.914 | 0.786 |
| Asian | 2.067 | 0.712 | 7.904 | 0.004 |
| Black | -1.073 | 0.435 | 0.342 | 0.014 |
| White | -0.036 | 0.556 | 0.964 | 0.948 |
| Other | 0.383 | 1.095 | 1.466 | 0.727 |
| Asian x Male | -1.170 | 0.904 | 0.310 | 0.196 |
| Black x Male | 0.452 | 0.531 | 1.572 | 0.394 |
| White x Male | 0.254 | 0.736 | 1.289 | 0.730 |
| Other x Male | 0.290 | 1.583 | 1.336 | 0.855 |
| Eco. Dis. | -0.274 | 0.290 | 0.760 | 0.344 |
| Not Eng. | -1.021 | 0.335 | 0.360 | 0.002 |
| LEP | -0.117 | 0.445 | 0.889 | 0.792 |
| At-Risk | 0.161 | 0.256 | 1.174 | 0.531 |
| Gifted / Tal. | -0.054 | 0.435 | 0.947 | 0.901 |
| 504 | 0.684 | 0.777 | 1.981 | 0.379 |
| GPA | -0.697 | 0.277 | 0.498 | 0.012 |
| AVID Grade | -0.517 | 0.155 | 0.596 | 0.001 |

Five of the independent variables stood out as substantive predictors, due to their significance at the $p < .05$ level. These variables are include being identified as Asian or Black, when the home language is not English, overall GPA, and AVID course grade. Since the last three variables were also significant in the correlation analysis, this is not surprising. It came as a surprise then that, despite turning up as significant in the correlation analysis, being labeled At-Risk was not significant in the logistic regression analysis. In addition, although none of the race/ethnicity labels were considered significant in the correlation analysis, two showed up as significant in the logistic regression.

Two variables that meet the $p < .05$ cutoff are the conditional main effects of Asian (0.004) and Black (0.014). This is interesting because these categories did not show up as statistically significant in the correlation analysis. Per the odds ratio assigned to the conditional main effect, students whose race/ethnicity is labeled as Asian are 7.904 times as likely to drop out of AVID as their Hispanic counterparts. On the other hand, the odds of students whose race/ethnicity is labeled as Black dropping out of AVID is roughly one-third that of Hispanic students. It is also interesting that the interaction of race/ethnicity and gender was not significant for any group, including Asian and Black. This would indicate that there is no statistically significant difference between Black male and Hispanic female dropout rates with AVID. This is also true in the comparison of Asian males and Hispanic females. Compared to high school and college dropout statistics, while Black students are less likely to drop out than Hispanic students, it is usually not by this large of a margin (Kena et al., 2016; National Center for Education Statistics, 2014a; Ryan & Siebens, 2012). It is possible that the perceived value of AVID is different for Asian, Black, and Hispanic students based on their ethnic groups' history with dropout in the United States. This will be examined more fully in chapter five.

A predictor with highly significance (0.002) is that representing students for whom English is not the language spoken at home. With an odds ratio of 0.360, the odds of these students dropping out of AVID are .360 as likely as those whose home language is English. Since the literature indicates that students whose home language is not English are more likely to drop out of high school and college, this result is surprising (Olivos & Mendoza, 2009; Zalaquett, 2006). It is possible that this could be explained by the fact that AVID was originally purposed as a support system for such students.

GPA was also statistically significant (0.012). With an odds ratio of 0.498, it appears that students with a GPA that is one standard deviation above the mean are only half as likely to drop out of AVID as those whose GPA is at the mean, if all other variables are held constant. This is consistent with dropout literature about students with low GPAs being more likely to drop out of high school or college (Eckstein & Wolpin, 1999; Gleason & Dynarski, 2002).

The fact that course grade in the AVID elective at the end of their first semester was the predictor with the highest significance (0.001) is interesting for a couple of reasons. First, there is no literature about the impact of the AVID grade on the likelihood of a student staying in AVID. Second, based on the odds ratio, a lower grade in AVID increases a student's chance of dropping out of AVID. With an odds ratio of 0.596, if all other variables are held constant, a student with an AVID grade one standard deviation above the mean is only 60% as likely to drop out of AVID as those whose grade is at the mean. While the association may seem obvious, these results would indicate that AVID grade is a major predictor of AVID dropout, which has not previously been addressed.

None of the remaining characteristics, including being At-Risk, were statistically significant when controlling for all other variables. The fact that At-Risk was significant in the

correlation analysis might be explained by the fact that other individual-level characteristics accounted for by the other independent variables were also descriptive of many of the At-Risk students, and ended up being better predictors of dropout than the actual At-Risk label. Thus, when controlled for all other variables, the At-Risk label was not significant. The low significance of the other variables was expected based on the correlation analysis. Although many of the characteristics listed were considered strong predictors of high school and college dropout as illustrated through their respective bodies of literature, they appear to be less effective as predictors of AVID dropout, at least for this sample.

**Intersectionality**

The theoretical framework for the study was the concept of Intersectionality (Crenshaw, 1989, 1991; Davis, 2008; Ragin & Fiss, 2017). Intersectionality addresses the intersection between two categories of difference in various social constructs. It addresses the impact that a combination of two variables might have on a situation as opposed to only looking at them individually (Davis, 2008). For instance, in this study, being an Asian female might be a more significant predictor than just looking at Asian or female alone. To capture this concept in the logistic regression, interaction terms were added in the analysis. Since race/ethnicity and gender are often focal points of intersectionality studies (Crenshaw, 1991), these two variables were selected for interactions in the logistic regression. That said, none of the race/ethnicity and gender interaction terms had statistical significance ($p > .05$).

Based on other studies on Intersectionality, gender, race/ethnicity, and socioeconomic status are commonly compared when looking at combined characteristics (Alexander, Riordan, Fennessey, & Pallas, 1982; Lareau, 2003; Williams, 2009). Therefore, I analyzed those interactions (gender and race/ethnicity; race/ethnicity and economically disadvantaged; and

economically disadvantaged and gender), and none were shown to be statistically significant. This was surprising because of the indication in the literature that it might be significant, as well as the fact that ethnicity showed up as a significant predictor. My observations of the national AVID data lead me to believe that there might be a connection between gender and race/ethnicity, but this study did not bear that out.

## Chapter Summary

In examining the initial data and the existing literature for descriptive characteristics that might indicate a likelihood for dropout, it appeared that several variables might serve as predictors of AVID dropout. After performing a correlation analysis, four stood out as having a medium effect size – AVID grade, GPA, home language, and at-risk status. When analyzing the considered variables in a logistic regression, I could remove at-risk as a predictor due to its high alpha value, which indicated a low statistical significance. While AVID grade, GPA, and home language remained the strongest predictors, race/ethnicity labels, such as Asian and Black, also rose as predictors. These findings meet the assumptions for logistic regression and model fit.

Most of these predictors of AVID dropout are items which have been studied as predictors of high school and college dropout, but the findings of this study were not always consistent with the literature for those predictors, suggesting that the factors which push and pull students into and out of AVID might be different from those that influence high school persistence. In addition, there is no literature about the AVID grade as a predictor before this study. This study adds a new perspective in that it addresses dropout from a college readiness program for which there is very little extant research.

In chapter five, I will discuss the findings of the analyses, draw conclusions and implications for stakeholders in AVID, and suggest some areas for future study.

# CHAPTER FIVE: DISCUSSION

## Introduction

In this chapter, I will provide an overview of the study along with the findings from my analyses. I will present conclusions from the previously-shared findings, as well as an overview of implications for AVID and education in general. I conclude by presenting ideas for future research, highlighting opportunities for contributions to the literature of the field.

## Summary of the Study

Advancement Via Individual Determination (AVID) has been a college readiness system for over 30 years, but it appears from national data that a large percentage of students are dropping out of the AVID elective class between their freshman and senior years of high school. For this study, I examined existing data from a cohort of students in a large urban/suburban district. Students who had been in the district for four years and who had joined AVID as freshmen were included in the study. Data was provided by the district and contained many measures of characteristics about the students. The research questions that I examined were as follows:

1. What characteristics of students who enter the AVID system as freshmen are most strongly correlated with dropping out of AVID before high school graduation?
2. What are the relative strengths of these characteristics in impacting the odds of a student dropping out of the AVID system during high school?

The existing literature about AVID is extremely scarce and none of the literature is specifically about who has been leaving AVID during high school. Therefore, I designed this study to address the gap in literature by looking at the characteristics of student's who dropped out of AVID in one district and determine the strength of those characteristics as predictors. This

information could contribute to improving student retention in AVID by examining potential opportunities for program redesign or improved implementation by sites.

### Intersectionality

The theoretical framework for this study was the concept of Intersectionality, which flows from the critical race theory (Davis, 2008). Intersectionality examines the impact that two characteristics may have together than they do when measured separately. For this study, I wanted to examine if being a White male or Black male may be a better predictor of dropping out of AVID than either race/ethnicity or gender would be by itself. Surprisingly, none of the interactions around gender, race/ethnicity, or socioeconomic status proved to be statistically significant in this study. This result of this study leaves the question of why are there more Black students and female students in AVID if there is no interaction between gender and race/ethnicity? In addition, since the national AVID data shows a larger percentage of Hispanic students in the senior year than in the freshmen year, and there is not as much of an increase for this study, could certain interactions become more significant if this study were repeated on a national scale?

## Limitations of the Study

While it might be possible to study several districts that have AVID, this study focused on a single district. By limiting the study, there was less likely to be confusion over terminology between two districts in terms of course naming, GPA calculations, and scheduling procedures. Since each of these may affect a student's choice to remain in AVID, limiting the variables by examining only one district helped to minimize this confusion.

With those limitations in mind, it is important to note that this is a very large school district with a very high percentage of the students involved in AVID. Having a cohort of 3,500

students with around 400 of those students associated with AVID provided for sufficient statistical power to perform the proposed analyses. In addition, the diversity of the student body allowed for a broad selection of criteria to be used.

Another limitation to this study derives from the fact that it is quantitative research. While this is a gap in the literature and something that needs to be addressed, the study only examines the question of "who" in terms of AVID completion patterns. However, to have the greatest impact on practice, the question of "why" will continue to need to be further addressed. The hope is that by identifying "who" through this study, it will be possible to provide focus for future qualitative studies that can identify the "why" reasons and what can be done to change the attrition rate.

## Findings

Through correlation analysis, I discovered that course grade in the AVID elective, overall GPA, the language spoken at home, and at-risk status all appear to have a direct correlation with AVID dropout. However, in the logistic regression, it became clear that at-risk was not a significant predictor of AVID dropout for the study sample. This could be explained by the possibility that an "at-risk" student might have a lower GPA or a combination of other influential characteristics that could impact a correlation between at-risk status and dropout. My logistic regression analysis revealed that race/ethnicity (as indicted by the conditional main effects of Asian and Black), language spoken at home, GPA, and AVID course grade were all statistically significant predictors of AVID drop out.

### GPA

The characteristic that was least surprising as a significant predictor of AVID dropout was the cumulative grade point average (GPA). Not only has GPA been used in several dropout

prediction models, but a lower GPA seems to indicate an earlier dropout (Gleason & Dynarski, 2002; Eckstein & Wolpin, 1999). Thus, it should be no surprise that a low cumulative GPA after one semester in high school would indicate that the student was struggling. If the student was taking more rigorous courses because of AVID, this low GPA could be blamed on AVID and lead to dropout. Thus, it is important for schools with AVID classes to be monitoring grades in all classes to identifying struggling students early and find necessary supports.

It is possible that the academic middle of the school may be difficult to determine. This is a selection criterion for AVID, but many students struggle in their first semester of high school as they adjust from the middle school or junior high environment. It may be that the student who is in the academic middle at the junior high will become an at-risk student in high school and need remediation rather than the additional challenges of AVID.

**AVID Grade**

AVID Grade is a unique characteristic in this study, because there is no existing literature about it. While it may be possible to extrapolate the literature from GPA, this study is addressing the large gap in the literature with the contribution of its significance in this study. Since the grade is the score after the first semester in AVID, it does seem to be logical that the student who is struggling the most in the class would be the most likely to drop out of the class. However, what might be an interesting future study would be to examine when that drop out occurred in relation to the AVID Grade. Were students most likely to drop out after the first semester, or did they struggle for several semesters before dropping out?

**Home Language**

With a large Hispanic population in this study (50% in AVID) and with Spanish being the most common language spoken other than English, it might be plausible to consider that both

categories would be significant, or neither. However, language spoken at home resulted in a statistical significance, while Hispanic as a race/ethnicity did not. When considering that students whose parents have limited English skills often do not receive academic support at home (Olivos & Mendoza, 2009; Zalaquett, 2006), it makes sense that they would want to stay in AVID, which is consistent with the findings. This is a big opportunity for AVID schools and the global organization to make connections to these homes. Many non-English speaking parents feel isolated from their childrens' schools (Hill & Torres, 2010). AVID could be the bridge, especially if the students would be the first in the family to attend college. While this may be happening already, which would explain the significance of this factor, there would seem to be opportunities to increase that relationship.

**Race/ethnicity**

The findings for race/ethnicity were also surprising. While it might be expected that a program designed to reach out to subpopulations that are underserved in higher education might be able to hold on to that group successfully, it is disappointing that another group is leaving so strongly. While in high school and college, Black students are more likely than White students and less likely than Hispanic students to drop out (Kena et al., 2016). However, in this study, Black are far less likely to drop out of AVID than either their White or Hispanic peers. This could be a circumstance where these students have found a "family" in AVID. However, this raises the question of why do White and Hispanic students not have the same connections. What is particularly interesting is the question of why Asian students are so much more likely to drop out of AVID. Is it due to schedule conflicts, less "family" connection in the class, or because they have more academic support at home?

## Practical Implications

In examining the implications of this research, it is important to consider both the implications for the practice of AVID and for future research about AVID. The practical side of the issue can be divided in issues around recruiting (how are students selected for AVID) and retention (how are students caused to want to stay in AVID). While the goal of this study was to identify those students who are most likely to drop out of AVID, it is important to address how that information can be used to address real situations in the AVID system.

### Recruiting

The AVID team at each school selects which students are allowed into the AVID elective class at that school. There is an application, interview, and selection process that every potential AVID student must follow. Sometimes, there are not enough applications for the space in the class, and the AVID site team must find ways to attract qualified candidates. In many cases, there are more students applying for AVID than there are spaces in the class. Under these circumstances, the AVID site team must choose which students who may be in the class out of the qualified candidates. In both situations, recruiting and selection are important parts of making sure that the right students are in the AVID class.

#### School and district.

Considering the current study, it is possible that AVID site teams may want to adjust their recruiting and selection process based on the findings. For instance, they may decide to weigh a student's cumulative GPA more heavily in the process, since students with lower GPAs may be less likely to stay in AVID for all four years. A higher cumulative GPA could be an indicator that the student is more engaged in the educational process and could then potentially be more successful in AVID. Many AVID students are selected because they are making high grades in

on-level courses. AVID encourages those students to take more advanced and rigorous courses and provides the support they need to take on the additional challenge. Students with lower cumulative GPAs in on-level courses may not be able to handle the increased rigor, even with the support structure provided by AVID. An exception to this could be students who are already taking advanced courses and are struggling, who might be more successful with AVID's support. However, the district used in this study weighs advanced courses with additional grade points, therefore these students should still have GPAs that are higher than those struggling in on-level courses. This is consistent with AVID's goal of reaching students in the academic middle, since it is quite possible that out of the students that have applied, the ones with a higher GPA may be in the middle of the school's overall academic grading scales.

In addition, AVID site teams may want to give extra consideration to those applicants whose families do not speak English at home, since these students are more likely to stay in AVID. Parents who do not speak English as their first language, particularly those who did not attend college, often find it difficult to assist their children in preparing for college (Olivos & Mendoza, 2009, Zalaquett, 2006). Since AVID is seeking first generation college students, this is an opportunity to make an impact. By recruiting students who are not getting the college readiness and academic language skills that they need to be successful in college at home, AVID site teams can find students who see the value of the support that AVID provides. Furthermore, recruiting and informational materials about AVID could be produced in multiple languages. This would help parents that do not speak English to understand the value of the class and help their student to be successful in it.

### AVID organization.

As an organization, AVID may want to look at students that are being recruited into AVID and adjust their marketing to schools. While the goal is to find students in the "academic middle", it may be necessary to look at how low that middle is extended. What is not clear from this study is whether the students with low cumulative GPAs are lower performing students who did not meet that criteria of being in the academic middle, or if students on the lower end the academic middle are just more likely to drop out of AVID. Defining an appropriate GPA mark is difficult because there is great variation across states, districts, and even campuses in grading practices and GPA formulation. There is also an opportunity to develop materials for parents in multiple languages that explain the value of AVID and helps parents who do not speak English to understand why their child should be in AVID. This may help with recruiting efforts.

## Retention

Regardless of which students are recruited into AVID, it is important to examine ways to keep more students in AVID over the long term, since research shows that longer time spent in AVID is advantageous to the student. Therefore, it may be important to study the students that are leaving AVID to determine if there are causes that could be mitigated.

### School and district.

For example, in schools with AVID, it is important to determine if the classroom and school atmosphere is culturally relevant. Is it possible that something about the AVID classroom is more welcoming to Black students and less so to Asian students? Are these findings a result of differences in cultures or education levels for various races/ethnicities in the community around these schools? While that question is beyond the scope of this study, findings indicate that being Black or Asian is associated with the likelihood of dropping out of AVID, albeit in opposite

ways. Therefore, examining the school and classroom settings with a focus on equality and equity might expose issues that could be corrected, which, in turn, could lead to better retention.

Along that line of thought, since low AVID course grade and low GPA are predictors of dropping out of AVID, it should be important for schools to examine both their grading procedures and the support provided for struggling AVID students. While AVID is designed to provide skills around note-taking, studying, and time management, perhaps additional time spent on monitoring grades and finding support could be productive.

**AVID organization.**

For the larger AVID organization, there may be opportunities, based on this study, to provide more resources and tools to support students outside of the AVID class. While AVID is a national organization and grading is determined in the local districts, AVID could provide additional tools to support AVID teachers in helping students track their grades and find additional scaffolding. Early struggles in the AVID class could be indicative of a recruiting problem (the student should not be in AVID) or a retention problem (the student needs help to stay in AVID).

As with the schools, AVID should constantly monitor its messaging to make sure that it is culturally relevant and appropriate for all race/ethnicity groups. The fact that Black students and those whose families do not speak English at home are significantly more likely to stay in AVID indicates that AVID is reaching its mission of helping students who are traditionally less likely to attend college. The program is providing a service that makes these students want to remain in AVID more often than other students who drop out. A question to be raised, however, is why do students who speak English at home drop out more frequently? Is there a need for additional support for these students, or is there a lower perceived value of AVID since they may

have increased support at home? This question is beyond the scope of this study and leads to a discussion of suggestions for possible research in the future.

## Research Implications

Studies into recruitment and retention in AVID are few and far between. This study adds to the research by providing a quantitative exploration of the predictors of AVID dropout. Additional research on a larger scale than this study could provide results that are more applicable to schools across the country. In addition, studies into why these groups of students are more likely to drop out of AVID would be a natural opportunity.

### Quantitative

Regarding quantitative research on this topic, an opportunity exists to expand on this study. Since the current study involved only one district in one state, there are opportunities to replicate this study with multiple districts across the country. To be able to confirm these predictors as being applicable to a broader array of schools and districts, there would need to be a much larger number of similar studies that show the universality of these predictors. The same methods used in this study could be replicated with various districts, ranging in location, size, and diversity. An increase in scope and size could greatly enhance the validity of these predictors and determine if they vary from region to region or state to state. There could be differences in the predictors for a relative small, rural district compared to a large, urban district, or differences in districts with a variety of demographic compositions.

### Qualitative

Of the very few studies that have been focused on dropout in AVID, they have been more qualitative in nature and have focused on the question of why students drop out of AVID. They have found a variety of reasons, such as conflicts in the scheduling due to the master schedule for

the school (Watt, et al., 2008) and students being misidentified for the program (Watt, Yanez, and Cassio, 2002). Qualitative researchers can draw upon this study as a starting place for various individual and contextual characteristics to further investigate. For instance, a researcher could ask *why* it is that students whose speak a language other than English at home are more likely to stay in AVID? There are numerous qualitative opportunities to build on the information that a quantitative study as this one provides. Researchers could interview students who exit AVID as a means of better understanding how and why the characteristics identified as predictors of dropout in this study stand manifest. Why do students with low GPAs drop out of AVID when it seems that AVID would provide them with skills and support that they need to bring their grades up? Is the GPA or the grade in AVID merely a symptom of an attitude or quality in the student that leads to AVID dropout? Interviews or focus groups studies with students fitting these characteristics could not only help to explain the statistical significance but could also lead to practical suggestions for retaining these students by providing whatever structure is missing.

In particular, a study of Asian students who drop out of AVID could be especially revealing. Perhaps exit exams or focus groups could be conducted on students who exit AVID during high school, with a special emphasis on the Asian students. Determining the reason for their decision to exit would be a key research emphasis. Are they leaving because of schedule conflicts, because they no longer see the value of the class, or because they do not feel like they belong there?

In the qualitative research found in the literature, the idea of course scheduling was mentioned multiple times (Watt, et al., 2008). Conflicts with other elective classes such as fine arts and sports may cause some students to have to choose between AVID and another course.

While this was not specifically addressed in this study, research could be done to see if schedule conflicts could be another predictor of student dropout. Is a student in band or football more likely to drop out of AVID? As students progress in their high school careers, they are often given more options around Career and Technology courses or other opportunities. Is the number of schedule options an issue in AVID retention? In addition, AVID encourages students to take more rigorous courses, such as AP, IB, and dual credit. This could be a scheduling problem if the number of sections offered for these courses creates conflicts with the AVID class. Research into the issues of students' courses and the master schedule could lead to better understanding of who drops out of AVID and why, which in turn, could lead to better practices to prevent those conflicts.

## Researcher Standpoint

As a former AVID Elective Teacher, I saw that many of the students that I had worked hard to recruit into the elective as freshmen were no longer in AVID as seniors, yet I had no way of predicting which students might need extra support or who might have been improper selections for the class. This study has opened up many possibilities, not only around practical changes that can be made in AVID, but also in future research that can be explored. I hope this research will contribute to the discussion of college readiness and lead to increased studies into who is leaving AVID and why so that the issue can be addressed more fully.

## Conclusion

For a program with a 35-year history and which affects almost two million students each year (AVID, 2016), there is a surprisingly small amount of literature about it. Even more limited is the research on why students drop out of AVID between their freshman and senior years of high school. This study has attempted to fill a small piece of that gap. Potentially, these findings

could help to address gaps in the AVID system, improve recruiting and retention in AVID classes, and inform much-needed, further research on the issue. These findings could also be extended in concept to other college readiness programs and contribute to the literature of college readiness in general. It is my hope that this, and all other research, will help to narrow the gap in college acceptance and college completion for all students, which in the end is the mission of AVID.

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# APPENDIX A

## Approval Letter from District

October 6, 2015

Mike Mozingo
Department of Educational Leadership & Policy Studies
University of Texas at Arlington – Hammond Hall
701 Planetarium Place, Box 19227
Arlington, Texas 76019

RE: Attrition in the AVID System in the ISD

Dear Mike:

The Research Review Committee of the Independent School District ( ) has reviewed and approved your proposal to conduct the above referenced study. Based on the information you have provided, the committee concludes that the study will serve a worthwhile purpose and will be beneficial to the district.

It is our understanding that you have read and agreed to the terms described in the *Procedures and Policies for Conducting Research in the Independent School District*. Please note that all school and district information, wherever applicable, should remain confidential within the limits of the law. In addition, any data collected from ISD should be solely for the purpose of the proposed study.

Approval by this committee provides no guarantee that any ISD department, school or personnel must comply with data requests for the proposed study.

Please make sure that the Research Review committee receives a copy of your report within 30 days or as soon as possible after the study has been completed. In all future communications, please use the study's reference number {15-042). Good luck with your study.

Sincerely,

Chairperson, Research Review Committee Department of Accountability, Planning & Testing

## APPENDIX B

IRB Approval Inquiry Letter from UTA

Office of Research Administration
Regulatory Services
817-272-3723
regulatoryservices@uta.edu

September 4, 2015

Bradley W. Davis, Ph.D.
Michael Mozingo
Educational Leadership & Policy Studies
The University of Texas at Arlington

### IRB Approval Inquiry

Dr. Davis,

Thank you for contacting the UT Arlington Institutional Review Board (IRB) regarding the secondary data analysis project with the Advancement Via Individual Determination (AVID) and Mike Mozingo. Upon reviewing the procedures involved with the study, it appears they would not meet the definition of "research with human subjects" as defined by the Office for Human-Research Protections (OHRP) and would therefore not be subject to review or approval by the Institutional Review Board (IRB) at UT Arlington. OHRP defines research as:

- A systematic investigation, including research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. A human subject in research is defined as, "A living individual about whom an investigator conducting research obtains data through intervention or interaction with the individual, or identifiable private information."

It appears from the description of procedures that the information collected for this project will be an analysis of de-identified, existing data provided to you by local school district. You will use this data to analyze longitudinal enrollment trends to determine factors that would be associated with the likelihood of dropping out of AVID. You are not interacting or intervening with any individuals and the data will be completely de-identified prior to you receiving the dataset. Therefore, this research is not research involving human subjects, and 45 CFR part 46 does not apply to your project.

I have included the link for decision charts provided from OHRP from which this determination is made for your reference. If the procedures that have been outlined and provided to our office

change such that IRB approval might be necessary or you have any questions regarding this determination please do not hesitate to contact me at regulatoryservices@uta.edu.

Thank You,

Mary-Colette Lybrand, MS, CCRP
Regulatory Services Manager
Office of Research Administration
The University of Texas at Arlington
Office: (817) 272-9329
Marycolette.lybrand@uta.edu

OHRP reference: http://www.hhs.gov/ohrp/policy/checklists/decisioncharts.html