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## Relationships between initial California High School Exit Exam performance and academic success of high school students

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RELATIONSHIPS BETWEEN INITIAL CALIFORNIA HIGH SCHOOL EXIT  
EXAM PERFORMANCE AND ACADEMIC SUCCESS  
OF HIGH SCHOOL STUDENTS

---

A Dissertation  
Presented to the  
Faculty of  
California State University,  
San Bernardino

---

In Partial Fulfillment  
of the Requirements for the Degree  
Doctor of Education  
in  
Educational Leadership

---

by  
Jennifer Ellen Lucht

June 2012

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June 2012

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## ABSTRACT

The purpose of this study was to examine the relationships between the California High School Exit Exam (CAHSEE) and 11th grade GPA and ACT scores as measures of academic success. Overall results of this study concluded that CAHSEE ELA scale scores, CAHSEE Math scale scores, and CAHSEE passage do not significantly predict 11th grade GPA; and CAHSEE passage does not significantly predict ACT scores. However, CAHSEE ELA scale scores and CAHSEE Math scale scores do predict ACT scores above and beyond 10th grade GPA, gender, ethnicity, and language proficiency. This finding suggests that the model is appropriate for students who are college bound, but may struggle on one or both parts of the CAHSEE.

However, the study does not support the predictability of GPA as a measure of academic success in the overall sample which included students that may or may not be college bound. All students must be afforded the opportunity to be successful with or without the CAHSEE requirement. Therefore, the ability to predict the academic success of students at the high school level would enable educators to implement specific, targeted academic interventions at the earliest point. Beyond the CAHSEE

requirement, as educators we must find a pathway for all students to stay in school and obtain a high school diploma.

## ACKNOWLEDGEMENTS

Words cannot adequately express the gratitude I have for the contribution of my sister, Katie, to making this degree possible. I am especially grateful for the endless number of trips to Disneyland you took with Ruthie so I could quietly concentrate on my work. Thank you.

I would also like to thank my committee chair, Dr. Carolyn Eggleston, for your endless availability to provide keen insight and emotional support to this project. You were the stability I needed to complete this study. As much as I appreciate the gentle prompting you provided, I am equally grateful for the independence that allowed me to spread my wings and exceed my own expectations. I would also like to thank Dr. Matt Riggs for your endless statistical guidance and feedback, Dr. Todd Jennings for your immeasurable ability to articulate ideas and share knowledge, and Dr. Donna Schnorr for your assistance with data acquisition and outside-the-box thinking.

## DEDICATION

I dedicate this study, this degree, and all the time and effort that went into these accomplishments to my daughter, Ruthie. Thank you for the seemingly unknowing sacrifices you have made. My hope is that you will grow to value your own education by the example that I have set. Remember to always believe in yourself, and you can accomplish anything. I love you, Bug!

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## CHAPTER ONE

### INTRODUCTION TO THE STUDY

Ten years have passed since the federal No Child Left Behind Act (NCLB) was passed in an effort to raise academic standards and provide overall improvement to public education systems throughout the nation. According to the U. S. Department of Education, this legislation called for measures "requiring States to implement statewide accountability systems...based on challenging State standards in reading and mathematics...ensuring that all groups of students reach proficiency within 12 years" (2002, para. 4). One of the tools implemented in the State of California to fulfill this requirement was the California High School Exit Exam (CAHSEE). The ultimate goal of the CAHSEE is to significantly improve pupil achievement and ensure that public high school graduates demonstrate grade level competency in reading, writing, and mathematics (CDE, 2011).

#### Background

High stakes testing has been a major factor in California public education reform, which is designed to

improve school accountability and raise achievement levels to close the achievement gap (Linn, 2000). However, there is concern that increased emphasis on high stakes testing, such as high school exit exams, may have adverse effects on students such as increased dropout rates (Cuenca, 1991).

As documented on the California Department of Education website, the CAHSEE was enacted in 1999 as authorized by California *Education Code (ED)* Section 60850(a). It required all high school students beginning with the class of 2004 to pass the CAHSEE to earn a high school diploma. In July 2003, the State Board of Education made the decision to delay the passage of the exit exam as a graduation requirement until the class of 2006. Although viewed by some as a reprieve, this decision simply delayed the inevitable challenge that the implementation of NCLB initiated.

The CAHSEE is aligned with California academic content standards and is comprised of an English-language arts (ELA) part and a mathematics part. California public high school students are required to pass both parts of the CAHSEE, in addition to all relevant state and local requirements, in order to graduate from high school with a diploma. Students receiving documented special education

services are exempt from the CAHSEE requirement beginning with the 2009-2010 school year. The first opportunity public high school students have to take the CAHSEE is in the second part of tenth grade. If both parts of the CAHSEE are passed with a scale score of 350 or higher, the CAHSEE requirement has been met. If one or both parts of the CAHSEE are not passed, students have two more opportunities in eleventh grade and between three and five opportunities in twelfth grade to retake the exam. For students who continue to struggle to pass the exam, it can consume three of the four high school years.

In 2008, Mason studied a group of 10th, 11th, and 12th grade students from Torrance West High School who had passed both parts of the CAHSEE, but were underachieving in their current math or English course. Mason obtained survey results from these students in an effort to identify predictors of student classroom achievement among underachievers. The survey included self-efficacy, self-regulation, valuing the goals of the school, attitude towards school, and attitude towards teachers. The only variable identified as a predictor of classroom underachievement was valuing the goals of the school. This

study did not identify motivational variables as predictive of classroom underachievement.

Reardon, Atteberry, Arshan, and Kurlaender, (2009) examined the effects of the CAHSEE requirement on persistence, graduation and subsequent achievement. This study included three cohorts of students from four large urban school districts in California and focused on students with prior low achievement levels. One cohort was subject to the exit exam requirement, while the other two were not. Reardon, et al., found no positive effects on student achievement. They reported a 3.6-4.5 percent increase in high school failure rate due to the requirement of passing an exit exam. Furthermore, the study concluded that students of color were most negatively impacted by the exit exam requirement. For this population, they reported a 15 to 19 percent decline in graduation rates due to the exit exam requirement. Girls were negatively impacted by the exit exam requirement at a rate twice that of boys.

Additionally, in 2010, Reardon, Arshan, Atteberry, and Kurlaender examined the effects of failing a high school exit exam on course taking, achievement, persistence, and graduation. In this study, Reardon, et al., used data from five cohorts of students from 4 of the 10 largest school

districts in California scheduled to graduate between 2006 and 2010. This study focused on students who took the CAHSEE for the first time in 10th grade. They studied the effects of failing the CAHSEE using California Standards Tests (CST) to determine the effects on academic achievement, and enrollment data to determine the effects on persistence and graduation. This study did not determine a significant effect of failing the CAHSEE on any of the four variables being analyzed for students within a quarter of a standard deviation of the passing score. The researchers concluded that the exit exam was not the primary "constraint" to obtaining a high school diploma for students just below the cut score on the CAHSEE.

Perhaps the most comprehensive study to date suggesting policy changes is the Holme, Richards, Jimerson, and Cohen (2010) analysis of 46 unique studies of the effects of high school exit examinations. The analysis of these studies focused on student achievement, graduation, postsecondary outcomes, and school response. Their findings collectively echoed the lack of positive benefits to students and potential negative consequences for students of color, female students, English learners (Reardon, et al., 2009); low achieving students (Bishop,



Mane, Bishop, and Moriarty, 2000); and students in high-poverty urban areas. Holme, et al., further reported that the increases in drop-out rates in the studies they analyzed appear, in part, to result from discouragement. The discouragement associated with an exit exam requirement for graduation, in the realm of self-determination theory, leads to superficial learning channeled solely to the content of the test (Ryan and Niemiec, 2009; Amrein and Berliner, 2002; Ryan and LaGuardia, 1999).

Current Minimum Competency Exams (MCEs) will be completely phased out by 2015 and replaced by more rigorous exit examinations or end-of-course (EOC) exams (Holme, et al., 2010). Although not as all-inclusive as exit examinations, EOC exams appear to be a viable option for those students who are not college bound. This is especially true in states where the published goal of the exit exam is to certify the assessment of college readiness (Holme, et al., 2010; CEP, 2008). Regardless which type of exam is chosen, as school reform and accountability measures are established to promote attainment of high standards, the student alone bears the consequences (Katzman, 2004).

## Statement of the Problem

High-stakes testing has long been a major factor in California public education reform to improve school accountability and raise achievement levels in an effort to close the achievement gap (Linn, 2000). Following NCLB, the implementation of the CAHSEE provided school districts with a measure of basic skills criteria by which to evaluate the academic success of its graduates. However, for some students, the CAHSEE is an additional hurdle above and beyond the course requirements already in place. Although the call for academic accountability is a necessary step to ensuring that all students are prepared for success after high school; there, too, must be accountability to ensure that all students are receiving services to optimize their success in attaining the skills necessary to meet all requirements to graduate from high school with a diploma. Without appropriate interventions in place for all students, requirements calling for higher levels of achievement may lead to more students failing classes, which are highly correlated with incidences of dropping out (McDill, Natriello & Pallas, 1986). Holme, et al., acknowledge that "high school exit exams may have little influence on student achievement, particularly if

students fail to receive the academic supports they need to improve" (p. 480).

### Purpose of the Study

Chaddock (2006) stated it best, when she reported "30 percent of our ninth graders fail to finish high school with a diploma, we are dealing with a crisis that has frightening implications for our future" (p. 3). Understanding and accepting the urgency of this issue is imperative to developing interventions and strategies to help high school students graduate with the basic skills necessary to be productive, contributing members of society. However, the strategies cannot be developed only for certain pre-identified groups of students. All students are required to participate in California's high-stakes testing administrations. Therefore, all students should be considered when strategic intervention groups are formed.

The aim of this study was to extend prior research examining the relationship between the CAHSEE requirement and student achievement. Although past research has primarily focused on identifying which groups of students are being negatively impacted by exit tests, this study

examined the relationship between initial CAHSEE scale scores and passage or failure on future high school academic success. This study utilized GPA and ACT scores as the indicators of future academic success. Student GPA is a predictor of high school dropout (Bowers, 2010) and ACT scores are a predictor of college admission (Noble, 2003).

Although the Reardon, et al., (2010) study chose not to use GPA as a measure of students' academic achievement because it is "...partly a function of the courses they take" (p. 504), this study did use GPA as a measure of academic achievement. The researcher chose to use GPA as it is a direct reflection of course completion, and course completion is a high school graduation requirement in addition to the exit exam. The aim of this study was not to evaluate the courses a student chose to take, simply the motivation and ability to pass the courses enrolled in during the high school years subsequent to taking the CAHSEE for the first time. Of specific consideration is whether initial CAHSEE results predicted 11th grade GPA and ACT scores.

This study was enacted in an effort to influence policymakers with respect to early interventions that will

potentially reduce dropout rates for all students. Former California State Superintendent of Public Instruction, Jack O'Connell, in a response to the Reardon, et al., (2009) study, reiterated that "the top priority of (his) administration was to close the achievement gap...and hold high schools accountable for the academic achievement of all students" (Tasci, 2009).

#### Research Questions

1. What is the relationship between initial CAHSEE performance and ACT scores?
2. What is the relationship between initial CAHSEE performance and 11th grade GPA?

## CHAPTER TWO

### REVIEW OF THE LITERATURE

This chapter provides background knowledge related to past research undertaken to identify possible correlations between high-stakes tests and high school dropout rates. The review begins with a brief definition of high-stakes tests and the impact of these requirements in the current era of accountability legislation. After a brief overview of high-stakes testing, the focus turns to exit exams, specifically the California High School Exit Exam, and the use of these tests as a criterion to graduate from high school. Building on the increased exposure recently afforded to the nationwide topic of high school dropout rates, this review subsequently identifies the demographic and academic factors that currently designate students as at-risk for high-school dropout. Finally, self-determination theory was interwoven relative to high-stakes testing and motivation.

For ease of understanding and readability, the term dropout was used consistently throughout this literature review even when the original authors of the literature

being reviewed referred to students who leave school before receiving a diploma by alternate terminology.

### High-Stakes Testing

One of the fundamental pieces of legislation that led to the current accountability movement was President Lyndon B. Johnson's Elementary and Secondary Education Act (ESEA) in 1965. The emphasis on accountability was further strengthened by President George W. Bush's No Child Left Behind Act (NCLB) which was passed in 2002. In fact, NCLB's empirical data driven focus requires sanctions to school districts for failure to meet test score requirements mandated by this legislation (Hollingsworth, 2007). The first step in understanding the potential correlation between high-stakes testing (HST) and dropout is defining high-stakes tests. Cortiella (2010) stated that tests which determine a standard for a high school diploma are defined as high-stakes tests because they are attached to consequences for students. Students are held individually accountable for their performance on these types of assessments.

"Self-determination theory has long argued that using controlling external contingencies to change behaviors or

enhance outcomes is typically ineffective over the long term, and yields many hidden costs," (Ryan and Weinstein, 2009, p. 225). Holding students accountable to pass a high-stakes exit exam as a requirement to graduate from high school is an example of this. The effects of academic events such as exit exams on student motivation are determined by the functional significance of the event (Ryan and Deci, 2000). The functional significance is defined as informational, controlling, or amotivating. Exit exams would be informational if the feedback from student performance was utilized to enhance the effectiveness of the student's academic program. However, this does not appear to be the use of these exit exams.

In response to public demand for more highly-skilled high school graduates and the requirement of NCLB legislation, states have developed a variety of policies such as high-stakes exit exams (Johnson, Thurlow, Stout & Mavis, 2007). With this in mind, Amrein and Berliner (2002) studied "high stakes" accountability as it relates to these statewide exams. They found that student learning was primarily limited to the content of statewide exams in states that attached high-stakes to their testing. This sentiment is echoed by researchers who studied the impact



of these tests on low-income students and students of color.

High-Stakes Testing, Socioeconomic Status, and Students of Color

Clarke, Haney, and Madaus (2000) found that schools with predominantly low-income student populations that administered high-stakes tests in eighth grade reported high dropout rates as early as the tenth grade. Madaus and Clarke further reported in 2001 that these high-stakes tests were not an equitable way to assess student progress when considering race, culture, native language, or gender. Therefore, it was no surprise to the authors that their findings showed that students of color had increased high school dropout rates.

By contrast, in 2002 Carnoy and Loeb reported that high school dropout rates in states utilizing high-stakes testing were not significantly higher than those states that did not administer these tests. However, in 2005, Carnoy added to this body of knowledge by revealing that dropout rates for low-income students were actually impacted by an education system which prepared them poorly for their entire high school career. He concluded that the

necessary effort and frustration experienced by these students were simply too great to overcome.

Hong and Youngs (2008) stated that increased opportunity for students of color and low-income students to obtain academic qualifications must be a quantifiable measure of successful accountability for any high-stakes testing policy. Therefore, the success of all students subject to a high-stakes exit exam requirement should be the primary goal of the State, to prove that the implementation of such a policy is ultimately successful. However, poverty and students of color are not the only demographic areas where challenges are identified in HST.

#### High-Stakes Testing and English Learners

In 1998, Pedroza reported the lack of sensitivity afforded "intermediate" speakers of English with respect to high-stakes testing policies. He cited the complexity of language experience and the inappropriateness of policies that assume all schools and students are alike. Seven years later, Adam (2005) stated that unlike other subgroups, English learners were still not provided with enough additional support or exam exemptions, and experienced increases in high-stakes test failure rates. Given the lack of support structures in place to scaffold

test preparation for English Learners, it is no wonder that motivation and college preparation are impacted.

### High-Stakes Testing and Motivation

In 2003, Amrein and Berliner reported an increase in students who leave school before graduation coupled with decreased student motivation due to high-stakes testing. This new requirement prompted other studies with respect to academic motivation. Montecel (2004) echoed the finding of Amrein and Berliner in a study where he determined that the high-stakes testing environment was not producing higher numbers of graduates or college enrollees. A third study, contrary to high-stakes testing proponents, claimed that these tests do not motivate students (Madaus and Clarke, 2001). Although, however, the authors do recognize that motivation is a barrier to increased workforce and college preparatory skills.

According to Amrein and Berliner (2003), enough negative, unintended consequences are attached to high-stakes testing that graduation exams of this nature are questionable. Among the questions is the impact of these tests on student graduation rates. Higher dropout and lower high school completion rates are inevitable, and Reid (2002) cautions of the danger in determining a student's

academic performance solely on the basis of these test scores. Noddings (2002) stated it best when he wrote "to have high expectations for each child does not mean that we must hold the same expectations for all children" (p.75). This statement rings true for high-stakes testing, and resonates even louder when considering high school exit exams.

According to self-determination theory (SDT), the pressure of passing an exit exam has a controlling functional significance whereby behavior is attempted to be controlled (Deci, Koestner, and Ryan, 1999). Ryan and Brown (2005) added that this is especially true when rewards and sanctions are connected to these exams. Amotivating, or discouraging, experiences occur when tests involve negative feedback or are too challenging. This causes students to feel incompetent, and thus less motivated (Ryan and Weinstein, 2009).

Several studies have been conducted to research the difference between controlling and informational testing conditions (Ryan and Brown, 2005; Ryan and LaGuardia, 1999; Grolnick and Ryan, 1987). All three of these studies showed more depth of processing and higher levels of learning in the informational condition rather than the

controlling condition. Ryan and Brown (2005) argued that the controlling condition of testing can lead to dangerous and undesirable behaviors such as teaching to the test. This certainly defeats the purpose of having an exit exam that is intended to ensure competence to graduate from high school. Ryan and Niemiec (2009) researched the impact of social contexts on the controlling condition of high-stakes testing by looking at student motivation. They found that SDT suggests promoting behaviors that will enhance intrinsic motivation in students subjected to the requirement of exit exams. Ford's (1992) definition of motivation echoes this idea in terms of personal goals with two basic properties: mentally representing outcomes to be achieved and trying to produce those outcomes. Ryan and Niemiec (2009) added that SDT has a positive component that is lacking in other theories whereby behaviors can be nurtured to enhance a desired outcome. Therefore, identifying the relationships between the high school exit exam and student academic success, will assist in analyzing the factors which contribute to the lack of student motivation to graduate from high school with a diploma.

## Exit Exams

During the 1970s, colleges and employers began to increase complaints to policymakers about the lack of adequate preparedness of America's high school graduates. Their claim was that these students lacked the basic skills necessary to ensure their future academic or employment success (Linn, 1998). In response to this need, some states began establishing minimum graduation requirements and increasing the emphasis on basic skills in the classroom. However, most states continued to allow local school districts to control the requirements for receiving a high school diploma, including the administration of exit exams (Linn).

In 1986, McDill, Natriello, and Pallas reported an early correlation between high rates of exit exam failure and dropout rates. They attributed this trend to the requirements surrounding higher levels of student achievement. The Center on Education Policy reported that American education has been significantly impacted by high school exit examinations (2008). Twenty-eight states currently require passage of a high school exit exam to fulfill graduation requirements and receive a diploma. Three more states will implement this requirement through

2012. The Human Resources Research Organization (HumRRO) reported that when that happens, 74 percent of America's high school students will be subjected to this requirement (Becker, Wise, & Watters, 2008). Just as with high-stakes testing in general, high school exit exams are impacting some student groups more than others.

#### Exit Exams and Student Demographics

The Center on Education Policy (2008) stated that students of color have been impacted by exit exams most heavily. Barnes (2009) reported that 81 percent of students of color in 29 states will be subjected to high-stakes graduation requirements by 2012. The students of color with the greatest negative impact according to these statistics were Black males. However, the Center on Education Policy's research did not significantly reveal that dropout rates for students of color were increased or decreased by high school exit exams.

Barnes (2009) identified an increase in the number of students of color who are failing exit exams and dropping out of high school. She further stated that although these exams are fulfilling the accountability requirements of the schools, it is at the expense of those students who are struggling to pass the exams. Amrein and Berliner (2002)

reported that white students are not impacted to the degree that students of color are impacted by high-stakes high school exit exams. They further noted that the states that require exit exams have high percentages of low socioeconomic, Hispanic and Black students.

Jacob (2001) found no effect on an average student's decision to drop out of high school due to the exit exam requirement. However, he did find that low-achieving students who were required to take exit exams had a 25% higher rate of dropping out of high school than comparable students in states that do not have this requirement.

#### Exit Exams and Student Achievement

Bishop, Mane, Bishop, and Moriarty (2000), studied the effect of MCEs on student achievement. They found no significant interaction between MCEs and GPA ( $\beta = -0.252$ ,  $SE = 0.15$ ,  $p < .05$ ). Although there was no overall effect of MCEs on test score gains, MCEs were associated with test score gains for students with C-GPAs ( $\beta = 0.42$ ,  $p < .1$ ).

Jacob (2001) reported that student reading achievement levels were significantly lower in states that required high-stakes graduation requirements than in states that did not impose this requirement for the bottom decile of students ( $\beta = -1.859$ ,  $SE = 0.665$ ,  $p < .05$ ). He stated that this



fact is in direct conflict with proponents of exit exams who argued that these exams would increase student achievement. Amrein and Berliner (2002) added that the states who reported dropout rate increases were those who had implemented passage of a state exit exam to graduate from high school, in addition to increasing student achievement.

#### California High School Exit Exam

The California High School Exit Exam (CAHSEE) was established in 1999 (California Education Code sections 60850 and 60851) and required all high school students beginning with the class of 2004 to pass the CAHSEE to earn a high school diploma. In July 2003, the State Board of Education made the decision to delay the passage of the exit exam as a graduation requirement until the class of 2006. Although viewed as a reprieve, this decision simply delayed the inevitable challenge that the implementation of NCLB initiated. California would soon find out which students suffered the greatest impact of this new requirement.

## California High School Exit Exam and Student Demographics

In 2011, the Human Resources Research Organization (Becker, et al.) reported the initial pass rates for the Class of 2013 after the tenth grade CAHSEE administration. The results revealed that pass rates were low for many subgroups. Black and Hispanic student pass rates were 58 and 67 percent respectively. Low-income students recorded a 65 percent pass rate, and the two lowest pass rates were recorded by English learners at 34 percent and all students with disabilities required to take the CAHSEE at 23 percent (p. 7).

Billinger (2004) studied the effect of demographic characteristics on CAHSEE test scores. Her findings regarding gender roles were consistent with prior research. In English, girls scored better than boys; and in math, boys scored better than girls. With respect to ethnicity, White and Asian students performed better than Black and Hispanic students. Students who spoke English as a first language scored higher than English learners. She further reported that students who participated in college preparatory courses scored higher on the CAHSEE than those students who did not take those courses. Additionally, she

tested the effects of athletic program participation and found that it was not a significant indicator of CAHSEE performance. Although this study identified the correlates of test achievement, academic achievement and high school completion should be the ultimate goal of an education system.

California High School Exit Exam, Student Achievement and Dropout Rates

Reardon, Atteberry, Arshan and Kurlaender (2009) examined the impact of exit exams on student achievement, student persistence and dropout rates. In this particular study, the authors were looking at persistence as measured by students who stay in school until 11th grade, students who stay in school until 12th grade, and students who graduate from high school. They found that student achievement did not increase and persistence was actually slightly decreased. The greatest consequence outlined by their research was the negative impact of exit exams on student dropout rates. Reardon et al. estimated that school completion rates in California decreased by 3.6 to 4.5 percent due to the exit exam requirement. They further concluded that the main groups of students impacted by this statistic were female students, students of color, and low-

achieving students. Reardon et al. found that these groups fail the CAHSEE at significantly higher rates than their White and male counterparts. Given this information, the review turns to literature pertaining to dropout rates as a consequence of high-stakes testing.

### High School Dropouts

In an effort to evaluate the effect of standards-based accountability on educationally disadvantaged subgroups, in 1999 the Committee on Educational Excellence and Testing Equity was created. The main function of this committee was to monitor students that were at higher risk of dropping out of high school than others. Their focus was on potential risk factors such as poverty, limited English speaking ability, disability status, and students of color. Their basis was that these groups have been at higher risk of dropout for decades (National Research Council, 2001). Given this background, the committee began to look at the impact high school exit exams were having on an already alarming dropout problem.

*"No Child Left Behind* federal education requirements around graduation rates are casting a national spotlight on the issue of dropouts," (Montecel, 2004, p. 1). California

is not an isolated state facing this dilemma. Orfield, Losen, Wald, and Swanson (2004) reported that only 68 percent of high school students, nationwide, will graduate on time with a regular diploma. Additionally, increased emphasis on high-stakes testing has prompted more urban, poor students of color to leave high school without receiving a diploma (Smyth, 2006).

Gleason and Dynarski (2002) reported that students who are typically identified as at-risk for dropping out of high school are not necessarily the students who are best served by dropout prevention programs. In a study aimed at finding a solution, they incorporated individual as well as composite risk factors for dropping out of high school. They reported that composite risk factors more accurately portrayed a dropout scenario than single risk factors did. Their study found that high absenteeism and students who were more than two years overage for their grade level were significantly predictive of high school dropout. Therefore, prevention programs intended to benefit students who were identified as potential high school dropouts using factors that did not include these two variables, were serving students who might or might not have dropped out. That being said, it is imperative that education leaders

are aware of all school factors which contribute to high school dropout to ensure the needs of the students are being met.

#### School Factors Impacting Dropout Rates

In 1993, Crone, Glascock, Franklin and Kochan found a strong predictive relationship between student attendance and graduation exit exam passage rates. This relationship was also indicative of suspension, expulsion and dropout rates. Their study examined urban secondary schools with a high population of students designated as having low socioeconomic status. Additionally, they found that Black students had better attendance rates than White students. However, this is not consistent with many studies of this nature with respect to students of color and poor students. Griffin and Heidorn (1996) found the same results regarding the adverse effects of exit exams on at-risk, disadvantaged students. However, examining the effect of exit exams on dropout rates, they found that the relationship was not significant for students of color or students with a poor academic record. The only significant increase in dropout rates was for students who were academically successful.

Many researchers blame high-stakes testing, at least in part, for the increasing U.S. dropout rates (Rothstein,

2002). These results, which highlight the negative consequences of high-stakes testing on dropout rates, are consistent with Shepard (2000), Darling-Hammond (2004), and Hong and Youngs (2008). Additionally, low-achieving students in states requiring high-stakes tests were more likely to drop out than those students in states without high-stakes testing (Jacob, 2001). To emphasize this, Clarke, Haney, and Madaus (2000) reported that of the ten states with the highest dropout rates, 9 of them correlate test scores with graduation requirements.

Grade retention is another school factor affecting a students' decision to drop out of high school. Potter and Wall (1992) reported that although high-stakes testing may have slightly increased student achievement, dropout rates did not decrease when student grade retention increased. Allensworth (2004) did a study of students from 1992 to 1998 and found 8 percent and 13 percent dropout rate increases for 17 and 19 year-olds respectively, when retained in a grade during their school career. In 2005, Allensworth performed another study using data from Chicago Public Schools after they had implemented a promotion standard for eighth grade. Although the study yielded negative effects of the policy on dropout rates, they were

smaller than those found through traditional retention practices.

### Student Demographics and Dropout Rates

Potter and Wall (1992) found that higher standards, which paved the way for high-stakes testing, provided minimal increases in academic achievement while producing negative effects on some students, especially male students of color. Haney (2000) reported that during the first year of high-stakes graduation testing in Texas, graduation rates declined, with a 50 percent greater decline for Black and Hispanic students than other ethnic groups. Yearly, more American poor students and students of color disproportionately disappear from the public school system than other groups of students (Orfield, et al., 2004).

When examining student demographic characteristics, Black and Hispanic students are more likely than White students to drop out of high school (Gleason & Dynarski, 2002) expanding the gap in graduation rates between students of color and White students (Miao & Haney, 2004). Reardon, et al., (2009) also found that students of color and females underperformed on exit exams when compared to their white male counterparts. Black:  $\beta = -0.156$ ,  $SE = 0.025$ ,



$p < .001$ ; Hispanic:  $\beta = -0.108$ ,  $SE = 0.023$ ,  $p < .001$ ; Female:  $\beta = -0.049$ ,  $SE = 0.011$ ,  $p < .001$ .

In a contrasting study, Mishel and Roy (2006) reported that the dropout crisis is not nearly as bad as reported. They found that although there is a disparity between the dropout rates of White students and students of color, it is due to the "flawed analyses of inadequate data," (p. 1). Walden and Kritsonis (2008) stated that almost all demographic and socioeconomic groups have documented academic student achievement gaps.

Looking at geographic location, Pallas (1987) found that students in urban schools have higher dropout rates than students in suburban and rural school settings. Students who attend urban schools typically live in poorer neighborhoods. Vartanian and Gleason (1999) reported that students living in poor neighborhoods are more likely to drop out of high school than those students who live in wealthier neighborhoods. This finding is consistent even if the family income of students living in wealthier neighborhoods is low.

Researchers from the National Board for Educational Testing and Public Policy did a study with high school students in Florida and found that moderate grades coupled

with a failure to pass the state's exit exam significantly increased dropout rates. A Griffin and Heidorn (1996) study found that students were more likely to drop out of high school after failing an exit exam if they had a high grade point average. Amrein and Berliner (2003) echoed the likelihood of high school dropout after high-stakes test failure even among students with good academic records.

In contrast to the aforementioned studies, Snyder (2004) did not find ethnicity or disability status to be significant predictors of high school dropout. Allensworth (2004) similarly found no significant changes in Black students' dropout rates from 1992 to 1998. However, the Snyder (2004) study did find gender, attendance, grades, retention, marital status of the family, and passage rates on end of course tests as significant predictors of high school dropout.

In 2003, Chudowsky and Gayler reported on the limited research that had been done to identify how dropout rates are being impacted by exit exams. They recommended further research in the form of longitudinal studies with respect to dropout rates and exit exams to add good information to the body of knowledge being used to establish policies. The authors criticized the continued policy-making in this

area without concrete evidence outlining student consequences and the impact these policies are having on society as a whole. However, before this can be examined, we must look at how dropout rates are calculated.

#### Dropout Rate Calculations

In 2001, the National Research Council acknowledged the difficulty in accounting for accurate dropout rates due to several factors including data sources and counting methods. In 2007, California changed the format by which school districts are required to report dropout statistics. This was done in an effort to form statewide consistency and accuracy with respect to the numbers, and accountability with respect to the students the districts serve. In 2008, the HumRRO report brought to the forefront significant concern regarding high school dropout rates in California. For the first time, these rates could not be compared to prior years due to the change in dropout accounting procedures implemented in 2007. Hong and Youngs (2008) concurred with these statements, adding that the ability to obtain reliable data is difficult due to the variability in the measurement of dropout rates and the vast number of interpretations surrounding them. The Center on Education Policy (2005) reported that

disagreement over dropout rate calculations is one of the main factors impeding consensus among researchers regarding the effect exit exam requirements are having on dropout rates. The reliability and consistency of these calculations is paramount to understanding the depth of the dropout problem.

After *No Child Left Behind* was signed into law in January 2002, the *NEA Today* (2003) reported the results of a statewide audit refuting the claim by President Bush that the public school system in Texas was the model of accountability. The audit results uncovered students who should have been reported as dropouts were actually recorded in other categories. Walden and Kritsonis (2008) stated that this procedure reported a 1.5 percent dropout rate which in actuality was closer to 40 percent.

In 2004, Montecel acknowledged that "unacceptably high dropout rates" were a concern long before the current accountability systems were implemented. In California specifically, the dropout statistics are alarming for some students of color. The newly implemented dropout accounting procedures reported by HumRRO identified a 18 percent total statewide four-year dropout rate with the Hispanic subgroup recording 22 percent, the Black subgroup

recording 30 percent, the low socioeconomic subgroup recording 19 percent, the Limited English Proficient subgroup recording 23 percent, and the White subgroup recording 11 percent (2011). As noted by the National Research Council (2001) these are groups that were already exhibiting dropout rates that were higher than the average.

In line with Montecel, Potter and Wall (1992) reported that the necessity for good data is imperative for researchers to fully comprehend high school completion rates. Without good data, the impact of student dropout rates cannot be understood. In turn, policies cannot be influenced and interventions cannot be developed and implemented.

#### Consequences of High School Dropout to Students

In 2009, Reardon, Atteberry, Arshan, and Kurlaender made an important distinction when they stated that the effects of failing exit exams fall solely on the students, not the districts or the schools in the current state of educational accountability. Although the CAHSEE passage rates are used in the state accountability calculations and policies requiring additional tutoring where passage rates are low, there are currently no sanctions applied to the schools or districts with low CAHSEE passage rates. The

students are the lone recipient of the positive or negative consequences of the outcome of the CAHSEE. In the realm of self-determination theory (SDT), the imposition of an exit exam as a graduation requirement fosters a controlling motivational strategy which leads to superficial learning that is limited to the content of the test (Ryan and LaGuardia, 1999; Amrein and Berliner, 2002; Ryan and Niemiec, 2009).

The consequences surrounding students who drop out of high school are staggering. Nearly 33 percent of all public high school students and nearly 50 percent of Blacks, Hispanics and Native Americans fail to graduate from high school (Bridgeland, Dilulio, and Morison, 2006). The authors explained that these consequences lead to unemployment, poverty, welfare, incarceration, health issues, marital problems, increases in single parenthood and children who eventually drop out of school. They further define this situation as dangerous for public high school students. Given the dire future outlook for high school dropouts, understanding why students do not complete the requirements to obtain a high school diploma is significant.

## Summary

Students of color, students with disabilities, English learners, and students designated as having low socioeconomic status have lower levels of achievement on high-stakes tests than their peers. As the title implies, high-stakes tests have consequences attached to them. In the case of exit exams required to graduate from high school with a regular diploma, the consequences can be dire to students who do not attain passing scores. Although there are proponents of both sides of the argument as to whether or not exit exams impact the high school dropout rate, there is consensus that this impact cannot be measured using a single risk factor. Bridgeland, et al. (2006) and Powell (2009) informed us that high school dropouts do not comprise a homogeneous group.

Dropout rates are a nationwide concern. Clarke, Haney, and Madaus (2000) reported that nine of the ten states with the highest dropout rates tie test scores to graduation requirements. Additionally, Haney (2000) found consistency between first-year high-stakes graduation testing and greater dropout rates for students of color. In contrast, Griffin and Heidorn (1996) did not identify a significant effect on dropout rates for students of color

or students with poor academic records. They did, however, find a significant effect on dropout rates for students who were otherwise academically successful, a point which was echoed by Amrein and Berliner in 2003. Even without exit exam requirements, the research identified disparities in dropout rates among White students and student of color (Gleason & Dynarski, 2002) which led to an increase in the achievement gap between these two groups (Miao & Haney, 2004).

The NCLB legislation mandates that California public school districts incorporate CAHSEE scores into their accountability equation. Therefore, even though students with disabilities do not currently have to pass the CAHSEE to receive a regular diploma when they graduate from high school, all students are required to take the exam in tenth grade. Similar to high-stakes testing in general, the studies focusing on exit exams found that the same student subgroups, including student with disabilities, share lower rates of success. When examining the dropout rate with respect to the CAHSEE specifically, the Reardon et al. (2009) study reported the lack of decreased dropout rates and school persistence since the inception of the CAHSEE.



Holding students accountable for passing an exit exam to graduate from high school is an example of the long-term ineffectiveness leading to potential hidden costs explained by self-determination theory (Ryan and Weinstein, 2009). Ryan and Deci (2000) reported the effects of student motivation in the context of high-stakes testing as determined by their functional significance. This can be informational, whereby student performance feedback is used to enhance the student's academic program; controlling, whereby rewards and sanctions are attached to the outcomes of the high-stakes testing (Ryan and Brown, 2005); or amotivating, whereby tests are too difficult or involve negative feedback which leaves the student feeling incompetent and discouraged (Ryan and Weinstein, 2009). Deci, Koestner, and Ryan, 1999, reported the pressure of passing an exit exam as having controlling functional significance according to SDT, especially when rewards and sanctions are connected to them (Ryan and Brown, 2005). Although higher levels of learning occur in the informational condition, Ryan and Niemiec (2009) found that SDT can promote behaviors within the controlling condition that will enhance intrinsic motivation in students subjected to the requirement of exit exams. This intrinsic

motivation could be a potential determinant in reducing the dropout rate and lessening future consequences.

Although initial CAHSEE performance and academic achievement potentially leading to high school dropout is the focus of this study, dropout rate concerns have a long history before high-stakes testing graduation requirements. "Unacceptably high dropout rates" were a concern long before the current accountability systems were implemented (Montecel, 2004). As previously stated, Chudowsky and Gayler (2003) recommended further research in the form of longitudinal studies with respect to dropout rates and exit exams to add good information to the body of knowledge being used to establish policies. Additionally, identification of this information can lead to specific and targeted interventions aimed at bridging the achievement gap and decreasing the overall dropout rate, as well as the rates of all student subgroups. Therefore, a study which aims to identify CAHSEE performance and academic success at the student level will give a broader picture of the potential to drop out of high school or persist through graduation.

Dropout rates in the U.S. are a serious concern and imminent action must be taken to understand the predictors

leading to these outcomes. It is imperative to develop appropriate, targeted intervention programs, and ultimately policy, that will positively impact the future of California's public school students.

### Hypotheses

1. Initial CAHSEE ELA scale scores will explain variance in composite ACT scores above and beyond gender, ethnicity, and language proficiency.
2. Initial CAHSEE Math scale scores will explain variance in composite ACT scores above and beyond gender, ethnicity, and language proficiency.
3. Initial CAHSEE passage of both ELA and Math parts will explain variance in composite ACT scores above and beyond gender, ethnicity, and language proficiency.
4. Initial CAHSEE ELA scale scores will explain variance in 11th grade GPA above and beyond gender, ethnicity, and language proficiency.
5. Initial CAHSEE Math scale scores will explain variance in 11th grade GPA above and beyond gender, ethnicity, and language proficiency.

6. Initial CAHSEE passage of both ELA and Math parts will explain variance in 11th grade GPA above and beyond gender, ethnicity, and language proficiency.

## CHAPTER THREE

### METHODOLOGY

#### Design of the Study

This study utilized a correlational design to investigate the relationships between initial CAHSEE performance and the academic success of high school students. This study adds to the body of literature surrounding the issue of students dropping out of high school before receiving a diploma. Of particular interest to this researcher was whether passage or failure of the CAHSEE during the initial administration in the spring of the 10th grade year explained variance in the 11th grade GPA or ACT scores of these students. Student-level data was collected from the tenth (2008-2009) and eleventh (2009-2010) grade high school years.

Variables in this study consisted of 2008-2009 (10th grade) cumulative GPA; 2009-2010 (11th grade) non-cumulative GPA; 2009-2010 ACT scores; 2008-2009 CAHSEE scale scores and overall CAHSEE passage or failure. Additionally, this study controlled for basic demographics including gender, ethnicity, and language proficiency. Variables are presented in Table 3.1.

Table 3.1.

*Variables in the Study*

Variable Name	Type of Variable
2008-2009 10th Grade GPA	Covariate
Gender	Covariate
Ethnicity	Covariate
Language Proficiency	Covariate
CAHSEE ELA Scale Scores	Predictor
CAHSEE Math Scale Scores	Predictor
CAHSEE Passage or Failure	Predictor
2009-2010 ACT Scores	Criterion
2009-2010 11th Grade GPA	Criterion

This study used a quantitative model based on data sources at the student level. All data had identifying information removed and are maintained on a password-protected flash drive.

### Participants

This study targeted a cohort of 2009-2010 high school juniors from two Southern California high schools within a

unified school district designated as mid-size on the fringe of an urban city. Only students continuously enrolled during the 2007-2008 (ninth grade), 2008-2009 (tenth grade), and 2009-2010 (eleventh grade) school years were included in this study. Continuous enrollment for the purposes of this study was defined as students who were enrolled in classes for the first and second semesters of their 9th, 10th, and 11th grade high school years.

According to July 2009 data collected from city-data.com, the school district in this study is in a community of approximately 99,000 people, 48.9% male and 51.1% female. The median age of the residents was 26.4 with a median household income of \$49,977. The ethnic breakdown of the community was 67.0% Hispanic, 16.2% White and 12.7% African American. The education attainment of the population was 66.5% high school, 8.7% Bachelor's degree, and 2.3% graduate degree. Unemployment was documented as 10.6% and updated to 17.4% as of March 2011. The number of residents living in poverty was documented as 17.0%.

According to the district website, in 2009-2010, the enrollment of the school district in this study was approximately 27,000. There were 13,424 male students

(49.7%) and 13,602 female students (50.3%). Hispanic students totaled 20,849 (77.1%), African American students totaled 4,065 (15.0%), and White students totaled 1,318 (4.9%). The school district reported 7,612 students (28.2%) classified as English Learners, and 2,081 students (7.7%) as receiving special education services. In addition, 22,491 students (83.2%) were designated as coming from a family of low socioeconomic status. This is determined by the district as qualification for free and reduced price meals.

This district is in the third year of Program Improvement. Although it met the Academic Performance Index (API) in 2011 with a 13 point increase to 746, it failed to meet Adequate Yearly Progress (AYP) for both English Language Arts (ELA) and Math. The district attained ELA proficiency of 45.6% on a corresponding target of 67.0%, and math proficiency of 47.8% on a corresponding target of 67.3%. On a positive note, the 2011 graduation rate increased to 79.7% from 69.9% in 2010.

#### Exclusion Criteria

Students with disabilities who were not subject to the CAHSEE as a requirement for graduation were not included in this study. Similarly, any student who did not take the



CAHSEE in the spring of the 2008-2009 academic year due to submission of a waiver was not included in this study. Any student who was absent during the initial administration of the CAHSEE was not included in this study.

### Measures

The demographic variables in this study consisted of gender, ethnicity, and language proficiency. These data were collected at the student level as reported by the school district. As defined by the study, all subsequent variable names are in alignment with the original data set. The author clearly recognizes that these are all contested terms.

#### Gender

Student-level data were collected on 1,422 11th grade students from two high schools. High school A had 638 (44.9%) students, 314 (49.2%) female and 324 (50.8%) male. High school B had 784 (55.1%) students, 383 (48.9%) female and 401 (51.1%) male. The complete data set included 697 (49.0%) female students and 725 (51.0%) male students. For purposes of this study, male students were "dummy" coded as "0" and female students were "dummy" coded as "1" in the analysis.

## Ethnicity

Student ethnicity data in this study were labeled consistent with reporting from the district. Four ethnicity subgroups were chosen for use in this study. The Hispanic subgroup had the largest number of students at 1,086 (76.4%), followed by the African American or Black subgroup at 225 (15.8%) and White subgroup at 56 (3.9%). The author chose to combine all students with ethnicity designations other than the three aforementioned into a single subgroup entitled Other Ethnicity. This subgroup encompassed the students designated as Samoan, Vietnamese, Cambodian, Filipino, Korean, American Indian or Alaska Native, Chinese, Japanese, Asian Indian, Other Asian, or Other Pacific Islander. This subgroup was collectively comprised of 55 students (3.9%).

For the purposes of this study, the ethnicity variable data were "dummy" coded prior to analysis. The Hispanic, African American or Black, and Other Ethnicity variables were each coded "1" while the remaining data were coded "0". When all ethnicity data were coded "0" the variable was White.

### Language Proficiency

A student's language proficiency in this district was classified according to one of four categories and was documented by the district in one of three ways: (1) as reported on the student's registration paperwork, (2) measured by the student's most recent California English Language Development Test (CELDT) results, or (3) as reported by the district English Language Development Department through a reclassification process. The author used the same four labels reported by the district for this study.

English Only (EO) students have exclusively spoken English as their primary language in the home. There were 658 (46.3%) students designated as EO by the district. Initially Fluent English Proficient (IFEP) students have spoken a language other than English as their primary language in the home and have tested at the Advanced level on the (CELDT) on their first attempt. This group included 297 (20.9%) of the students in this study. English Learner (EL) students have spoken a language other than English as their primary language in the home and have tested at a level below Advanced on the CELDT on their first and subsequent attempts. There were 292 (20.5%) EL students in

this study. The Reclassified Fluent English Proficient (RFEP) group was comprised of 175 (12.3%) students. These are students that were previously designated as English Learners and have now been "reclassified" by the district.

Reclassification is a procedure based on criteria set forth by *Education Code* Section 313(d). Students must have an overall CELDT rating of Early Advanced or Advanced and have scored at least at the Intermediate level on each of the four subsections based on Reading, Writing, Speaking, and Listening. The other three criteria for reclassification include performance on basic skills as assessed by the ELA portion of the California Standards Test (CST), teacher evaluation of student academic performance, and parent consultation.

For the purposes of this study, the language proficiency variable data were "dummy" coded prior to the analysis. The IFEP, RFEP, and EL variables were each coded "1" while the remaining data were coded "0". When all language proficiency data were "0", the variable was EO.

#### Student GPA

Two GPA variables were used in this study. Tenth grade GPA was used as a reference point at which to begin the analysis. Within the collected data set, 1151 students

(80.9%) had a 10th grade cumulative GPA recorded. This GPA is reflective of all courses taken during the 9th grade and 10th grade school years.

The criterion variable 11th grade GPA is a combination of Math, English, and Science grades from the first semester of the 2009-2010 school year. Grades were recorded on a 4-point scale where an "A" is recorded as 4 points and an "F" is recorded as 0 points. Math grades were recorded for 1176 students (82.7%) ranging from 0 to 4. English grades were recorded for 1152 students (81.0%) ranging from 0 to 4. Science grades were recorded for 940 students (66.1%) ranging from 0 to 4.

The three academic grades of math, English, and science were chosen for this analysis because they are consistent with the four subscale categories of the second criterion variable, ACT scores. A factor analysis was conducted to justify the combination of course grades as an overall GPA for use as a criterion variable in the regression analyses.

### ACT Scores

The American College Testing Program was developed in 1959. Now known simply as the ACT, the two primary goals of the test are "to help students make better decisions

about which colleges to attend and which programs to study, and to provide information helpful to colleges both in the process of admitting students and in ensuring their success after enrollment" (History of ACT, retrieved 2012).

Predictive validity of ACT scores with respect to first-year college GPA, enrollment/retention status, collegiate academic proficiency, and degree-attainment level have been documented (Allen, Robbins, Casillas, & Oh, 2007; Robbins, Allen, Casillas, Peterson, & Le, 2006).

The ACT is comprised of 215 multiple-choice questions and is administered six times per year. It consists of seven scale subscores, four scale scores, and one composite score. The seven scale subscores assess the areas of Usage/Mechanics, Rhetorical Skills, Elementary Algebra, Algebra/Coordinate Geometry, Plane Geometry/Trigonometry, Social Studies/Science, and Arts/Literature. These seven subscores formulate the four scale scores in the areas of English, Math, Science, and Reading. The four scale scores then render the single composite recorded ACT score. Composite scores range from 1 (low) to 36 (high).

For the purposes of this study, ACT scores were collected for students that participated in any administration of the ACT during their 11th grade year. A

total of 510 students (35.9%) attempted the ACT with a range of scores from 10 to 29. A factor analysis was conducted to justify the composite score as a combination of individual scale scores for use as a criterion variable in the regression analyses.

### CAHSEE Scores

The CAHSEE has two primary purposes. They are to "significantly improve student achievement in public high schools and to ensure that students who graduate from public high schools can demonstrate grade level competency in reading, writing, and mathematics (California Department of Education, 2011)." It is comprised of two parts consisting of English Language Arts (ELA) and mathematics and is aligned with California academic content standards.

The ELA reading portion of the CAHSEE tests knowledge of vocabulary, reading comprehension, and analysis of information and literary texts. The ELA writing portion of the CAHSEE includes writing strategies, applications, conventions, and a written response to a writing task. According to the California Department of Education (CDE), these skills are tested through grade ten California academic content standards. The mathematics portion of the CAHSEE tests academic content standards through the first

part of Algebra I (CDE, 2011). This portion is a series of multiple-choice questions covering statistics, data analysis and probability, number sense, measurement and geometry, mathematical reasoning, and algebra.

The CAHSEE results are reported as scale scores ranging from 275 to 450. A scale score of 350 on each of the two parts is required to pass that portion. For the purpose of this study, both the scale score continuous variables and the pass/fail dichotomous variable were tested. A student who does not pass one portion is allowed to retake that part of the CAHSEE. After the initial test administration in grade ten, students who do not pass one or both parts of the CAHSEE are given up to two opportunities in grade eleven, three to five opportunities in grade twelve, and three opportunities per year as an adult student to pass one or both parts of the exam (CADOE, 2011).

The Human Resources Research Organization (Wise, et al., 2004) maintains that the CAHSEE meets all standards for validity in their Independent Evaluation of the California High School Exit Examination (CAHSEE): Second Biennial Report. They state that "each test question is targeted to a particular standard in the content domain..."



(p. 11). HumRRO also reports that all standards that apply to CAHSEE with respect to reliability have also been met. However, Callet (2005) found that "disparity in overall scores of the subgroups..." coupled with "concern regarding scores as the test has been modified several times since its introduction" (p. 297) raise reliability concerns with respect to the CAHSEE.

For the purposes of this study, there were three variables relative to the CAHSEE. Student ELA Scale Scores, Math Scale Scores, and overall CAHSEE passage or failure were collected for each student that participated in the initial CAHSEE administration in February of 2009. A total of 1119 students (78.7%) participated in the ELA portion of the CAHSEE with a range of scores from 274 to 450, and 1118 students (78.6%) participated in the math portion of the CAHSEE with a range of scores from 293-450. A total of 791 students passed both parts of the CAHSEE on the initial administration. This statistic reflects 55.6% of the total number of students in the data set and 70.7% of the total number of students who participated in at least one part of the CAHSEE during this initial administration.

## Procedures

This study utilized student-level data collected from two comprehensive high schools within a school district in the Inland Empire region of Southern California. Data were provided from the district in Excel spreadsheet format. Data provided were delineated by high school. Each school had a separate spreadsheet containing tabs for demographic data and academic and testing data.

The spreadsheets provided by the district were analyzed by the researcher and all variables determined to be utilized in the study were compiled to form a single spreadsheet. This final spreadsheet was imported from Excel into the Statistical Package for the Social Sciences (SPSS) software program in preparation for analysis. All data and output files were secured on a password-protected flash drive.

## Data Analysis

A series of sequential regressions were performed to determine whether CAHSEE results explained variance in 11th grade GPA and ACT scores above and beyond all other variables in the study. Three separate regressions were performed for each of the two criterion variables, 11th

grade GPA and ACT scores. The 2008-2009 10th grade GPA data were entered in the first block, the second block consisted of the demographic variables (gender, ethnicity, and language proficiency), and the final block included the CAHSEE results. Third block CAHSEE results were entered as ELA scale scores in the first regression analysis, as Math scale scores in the second regression analysis, and then as a dichotomous pass or fail outcome in the third analysis. The same procedure was used for each of the two criterion variables.

Prior to analysis, all variables were screened for missing data patterns, skewness, kurtosis, assumptions of normality, linearity and homoscedasticity, multicollinearity, and univariate and multivariate outliers.

## CHAPTER FOUR

### RESULTS

The purpose of this study was to examine the predictive ability of initial CAHSEE performance on GPA and ACT scores. The CAHSEE was evaluated using student-level ELA scale scores, Math scale scores and then overall performance during the first administration. These variables were chosen to add to the literature extended by Reardon, et al., (2008) that examined the effects of "barely failing" on subsequent student achievement. Given that the CAHSEE is first administered during the 10th grade academic year, GPA and ACT scores among 11th grade high school students were analyzed. A series of sequential regression tests were used to determine the amount of variance in GPA and ACT scores that could be accounted for by initial CAHSEE performance above and beyond the demographic factors of gender, ethnicity, and language proficiency. This chapter describes the results of these regressions as a means of evaluating the research questions outlined in this study.

The Statistical Package for the Social Sciences (SPSS) software was used for the analysis. All variables were

evaluated for and met the assumptions of linearity and homoscedasticity. The distribution of residuals was normal and there was no evidence of multicollinearity. No univariate or multivariate outliers were identified. The criterion variable ACT scores was slightly positively skewed.

Before the regression analyses, a factor analysis was performed. The purpose of the factor analysis was to determine whether academic grades and ACT scores would form two distinct and internally consistent constructs. All 11th grade course grades loaded nicely on a single factor. Additionally, the ACT English, Math, Reading, and Science scale scores loaded nicely on a single factor. The factor analysis clearly justified the combination of three academic grades and four ACT scale scores and will henceforth be referred to as 11th Grade GPA and composite ACT Scores. The Pattern Matrix is presented in Table 4.1.

The regressions were performed in three steps. The first block was comprised of 10th grade GPA to determine the baseline variance in the criterion variables 11th grade GPA and ACT scores. The control variables of gender, ethnicity, and language proficiency were entered in the second block to determine the additional variance in 11th

grade GPA and ACT scores above and beyond 10th grade GPA. The third block determined the incremental variance in 11th Grade GPA and ACT scores explained by the addition of CAHSEE results to the regression equation.

Table 4.1.

*Pattern Matrix for Factor Analysis*

Variable	Factor	
	Composite ACT Scores	11th Grade GPA
ACT English Scale Scores	0.84	0.00
ACT Reading Scale Scores	0.82	-0.01
ACT Science Scale Scores	0.81	-0.08
ACT Math Scale Scores	0.70	0.19
11th Grade English Grades	-0.05	0.67
11th Grade Science Grades	-0.02	0.61
11th Grade Math Grades	0.18	0.53

Hypothesis #1: California High School Exit Exam  
English Language Arts Scale Scores  
and ACT Scores

Hypothesis #1 stated that initial CAHSEE ELA scale scores will explain variance in composite ACT scores above and beyond gender, ethnicity, and language proficiency.

Table 4.2.

*Descriptive Statistics for Hypothesis #1*

<u>Variable</u>	<u>M</u>	<u>SD</u>
Composite ACT Scores	17.24	3.96
10th Grade GPA	2.44	0.89
CAHSEE ELA Scale Scores	382.30	32.05
Gender	0.58	0.49
Hispanic or Latino	0.79	0.41
African American or Black	0.14	0.35
Other Ethnicity	0.04	0.19
IFEP	0.23	0.42
RFEP	0.17	0.37
EL	0.17	0.37

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N = 452

Table 4.2 shows the mean and standard deviation for the predictor variables CAHSEE ELA scale scores and 10th grade GPA, and the criterion variable composite ACT scores. Table 4.3 displays the correlations among variables used to test Hypothesis #1.

Table 4.4 displays the  $R$ ,  $R^2$ , adjusted  $R^2$ ,  $R^2$  change, the unstandardized coefficients ( $B$ ), and the standardized regression coefficients ( $\beta$ ) after entry of all nine IVs. After step 3, with all IVs in the equation,  $R^2 = .20$ ,  $F(9,442) = 12.61$ ,  $p < .05$ . The Adjusted  $R^2$  value of .19 indicates that almost a fifth of the variability in composite ACT scores is predicted by 10th grade GPA, gender, ethnicity, language proficiency, and CAHSEE ELA scale scores.

After step 1, with 10th grade GPA in the equation,  $R^2 = .10$ ,  $F_{inc}(1,442) = 47.08$ ,  $p < .05$ . After step 2, with gender, ethnicity, and language proficiency added to the prediction of composite ACT scale scores,  $\Delta R^2 = .07$ ,  $F_{inc}(1,442) = 6.11$ ,  $p < .05$ . Addition of gender, ethnicity, and language proficiency to the equation with 10th grade GPA results in a significant increment in  $R^2$ .

After step 3, with CAHSEE ELA scale scores added to prediction of composite ACT scores by 10th grade GPA,



gender, ethnicity, and language proficiency,  $\Delta R^2 = .03$  (adjusted  $R^2 = .19$ ),  $F_{inc}(1,442) = 16.62$ . Addition of CAHSEE ELA scale scores to the equation reliably improved  $R^2$ . This pattern of results suggests that 10.0% of the variability in composite ACT scores is predicted by 10th grade GPA. Gender, ethnicity, and language proficiency are significant and explain an additional 8.0% variance in composite ACT scores. CAHSEE ELA scale scores are also significant and explain an additional 3.0% of variance in composite ACT scores. The practical significance on this variance is moderate with a standardized beta of .21 (Keith, 2006).

The standardized beta of  $-.40$  for Hispanics in the final model testing Hypothesis #1 indicates a main and negative effect of being Hispanic or Latino on performance with the ACT in reference to Whites. Similar results were found for African American or Black students with a standardized beta of  $-.39$ . A main and negative effect was also found of being an English Learner (EL) student on performance with the ACT in reference to English Only (EO) students with a standardized beta of  $-.20$ .

Table 4.3.

*Correlation Matrix for Hypothesis #1: California High School Exit Exam English Language Arts Scale Scores and ACT Scores*

	Compo- Site ACT Scores	10th grade GPA	Gender	Hispanic or Latino	African American or Black	Other Ethni- city	IFEP	RFEP	EL
10th grade GPA	.31								
Gender	.00	.11							
Hispanic or Latino	-.08	.01	.02						
African Am. or Black	-.07	-.08	-.02	-.78					
Other Ethnicity	.13	.15	-.01	-.37	-.08				
IFEP	.00	-.09	-.02	.13	-.12	.04			
RFEP	-.02	-.03	.04	.13	-.12	.01	-.25		
EL	-.16	.04	.05	.09	-.12	-.06	-.25	-.21	

CAHSEE									
ELA									
Scale									
Scores	.33	.56	-.02	.03	-.08	.08	-.04	-.06	.01
N = 452									

Table 4.4.

*Sequential Regression Model for Hypothesis #1: California High School Exit Exam  
English Language Arts Scale Scores and ACT Scores*

Step	Variables	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	R <sup>2</sup> Change	B	$\beta$
1.Model 1		0.31	0.10	0.09	0.10*		
	10th grade GPA					1.36	0.31*
2.Model 2		0.42	0.17	0.16	0.07*		
	10th grade GPA					1.33	0.30*
	Gender					-0.13	-0.02
	Hispanic or Latino					-3.93	-0.41*
	African American						
	or Black					-4.64	-0.41*
	Other Ethnicity					-2.25	-0.11
	IFEP					-0.30	-0.03
	RFEP					-0.60	-0.06
	EL					-2.19	-0.21*

3.Model 3	0.45	0.20
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10th grade GPA

Gender

Hispanic or Latino

African American

or Black

Other Ethnicity

IFEP

RFEP

EL

CAHSEE ELA scale scores

---

\* $p < .05$

0.19

0.03\*

0.80

0.18\*

.00

.00

-3.86

-0.40\*

-4.40

-0.39\*

-2.16

-0.10

-0.26

-0.03

-0.46

-0.04

-2.12

-0.20\*

0.03

0.21\*

---

## Hypothesis #2: California High School Exit Exam Math Scale Scores and ACT Scores

Hypothesis #2 stated that initial CAHSEE Math scale scores will explain variance in composite ACT scores above and beyond gender, ethnicity, and language proficiency. Table 4.5 shows the mean and standard deviation for the predictor variables CAHSEE Math scale scores and 10th grade GPA, and the criterion variable composite ACT scores. Table 4.6 displays the correlations among variables used to test Hypothesis #2.

Table 4.7 displays the  $R$ ,  $R^2$ , adjusted  $R^2$ ,  $R^2$  change, the unstandardized coefficients ( $B$ ), and the standardized regression coefficients ( $\beta$ ) after entry of all nine IVs. After step 3, with all IVs in the equation,  $R^2 = .22$ ,  $F(9,444) = 14.26$ ,  $p < .05$ . The Adjusted  $R^2$  value of .21 indicates that more than a fifth of the variability in composite ACT scores is predicted by 10th grade GPA, gender, ethnicity, language proficiency, and CAHSEE Math scale scores.

After step 1, with 10th grade GPA in the equation,  $R^2 = .10$ ,  $F_{inc}(1,444) = 49.18$ ,  $p < .05$ . After step 2, with gender, ethnicity, and language proficiency added to the prediction of composite ACT scale scores,  $\Delta R^2 = .08$ ,  $F_{inc}$

(1,444) = 6.22,  $p < .05$ . Addition of gender, ethnicity, and language proficiency to the equation with 10th grade GPA results in a significant increment in  $R^2$ .

Table 4.5.

*Descriptive Statistics for Hypothesis #2*

Variable	<i>M</i>	<i>SD</i>
Composite ACT Scores	17.22	3.97
10th Grade GPA	2.44	0.90
CAHSEE Math Scale Scores	384.68	33.56
Gender	0.58	0.49
Hispanic or Latino	0.79	0.41
African American or Black	0.14	0.35
Other Ethnicity	0.04	0.19
IFEP	0.24	0.43
RFEP	0.17	0.38
EL	0.17	0.38
N = 454		

After step 3, with CAHSEE Math scale scores added to prediction of composite ACT scores by 10th grade GPA, gender, ethnicity, and language proficiency,  $\Delta R^2 = .04$



(adjusted  $R^2 = .21$ ),  $F_{inc}(1,444) = 26.12$ . Addition of CAHSEE Math scale scores to the equation reliably improved  $R^2$ . This pattern of results suggests that 9.8% of the variability in composite ACT scores is predicted by 10th grade GPA. Gender, ethnicity, and language proficiency are significant and explain an additional 8.1% variance in composite ACT scores. CAHSEE Math scale scores are also significant and explain an additional 4.5% of variance in composite ACT scores. The practical significance on this variance is large with a standardized beta of .28 (Keith, 2006).

The standardized beta of  $-.38$  for Hispanics in the final model testing Hypothesis #2 indicates a main and negative effect of being Hispanic or Latino on performance with the ACT in reference to Whites. Similar results were found for African American or Black students with a standardized beta of  $-.36$ . A main and negative effect was also found of being an English Learner (EL) student on performance with the ACT in reference to English Only (EO) students with a standardized beta of  $-.21$ .

Table 4.6.

*Correlation Matrix for Hypothesis #2: California High School Exit Exam  
Math Scale Scores and ACT Scores*

	Compo- Site ACT Scores	10th grade GPA	Gender	Hispanic or Latino	African American or Black	Other Ethni- city	IFEP	RFEP	EL
10th grade GPA	.31								
Gender	.00	.11							
Hispanic or Latino	-.08	.00	.02						
African Am. or Black	-.07	-.08	-.02	-.78					
Other Ethnicity	.13	.15	-.01	-.37	-.08				
IFEP	.00	-.09	-.02	.14	-.12	.04			
RFEP	-.02	-.03	.04	.13	-.12	.01	-.25		
EL	-.16	.04	.05	.09	-.12	-.06	-.25	-.21	

CAHSEE

Math

Scale

Scores

.38

.61

-.09

.05

-.15

.12

-.04

-.04

.02

N = 454

Table 4.7.

*Sequential Regression Model for Hypothesis #2: California High School Exit Exam  
Math Scale Scores and ACT Scores*

Step	Variables	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	R <sup>2</sup> Change	B	$\beta$
1.	Model 1	0.31	0.10	0.10	0.10*		
	10th grade GPA					1.39	0.31*
2.	Model 2	0.42	0.18	0.16	0.08*		
	10th grade GPA					1.36	0.31*
	Gender					-0.17	-0.02
	Hispanic or Latino					-3.95	-0.41*
	African American						
	or Black					-4.65	-0.41*
	Other Ethnicity					-2.28	-0.11
	IFEP					-0.32	-0.03
	RFEP					-0.57	-0.05
	EL					-2.23	-0.21*

3.Model 3	0.47	0.22
10th grade GPA		
Gender		
Hispanic or Latino		
African American		
or Black		
Other Ethnicity		
IFEP		
RFEP		
EL		
CAHSEE Math scale scores		

---

\*p < .05

0.21

0.04\*

0.57

0.14\*

0.18

0.02

-3.72

-0.38\*

-4.09

-0.36\*

-2.18

-0.10

-0.30

-0.03

-0.50

-0.05

-2.18

-0.21\*

0.03

0.28\*

---

### Hypothesis #3: California High School Exit Exam Passage and ACT Scores

Hypothesis #3 stated that initial CAHSEE passage both ELA and Math parts will explain variance in composite ACT scores above and beyond gender, ethnicity, and language proficiency. Table 4.8 shows the mean and standard deviation for the predictor variable 10th grade GPA and the criterion variable composite ACT scores. Table 4.9 displays the correlations among variables used to test Hypothesis #3.

Table 4.10 displays the  $R$ ,  $R^2$ , adjusted  $R^2$ ,  $R^2$  change, the unstandardized coefficients ( $B$ ), and the standardized regression coefficients ( $\beta$ ) after entry of all nine IVs. After step 3, with all IVs in the equation,  $R^2 = .17$ ,  $F(9,463) = 10.72$ ,  $p < .05$ . The Adjusted  $R^2$  value of .16 indicates that 16% of the variability in composite ACT scores is predicted by 10th grade GPA, gender, ethnicity, language proficiency, and CAHSEE ELA scale scores.

After step 1, with 10th grade GPA in the equation,  $R^2 = .09$ ,  $F_{inc}(1,463) = 47.50$ ,  $p < .05$ . After step 2, with gender, ethnicity, and language proficiency added to the prediction of composite ACT scale scores,  $\Delta R^2 = .08$ ,  $F_{inc}(1,463) = 6.39$ ,  $p < .05$ . Addition of gender, ethnicity,

and language proficiency to the equation with 10th grade GPA results in a significant increment in  $R^2$ .

Table 4.8.

*Descriptive Statistics for Hypothesis #3*

Variable	<i>M</i>	<i>SD</i>
Composite ACT Scores	17.19	3.93
10th Grade GPA	2.43	0.91
Gender	0.59	0.49
Hispanic or Latino	0.79	0.41
African American or Black	0.14	0.35
Other Ethnicity	0.03	0.18
IFEP	0.23	0.42
RFEP	0.17	0.38
EL	0.18	0.38

N = 473

After step 3, with the passage of both parts of the CAHSEE added to prediction of composite ACT scores by 10th grade GPA, gender, ethnicity, and language proficiency,  $\Delta R^2 = .00$  (adjusted  $R^2 = .16$ ),  $F_{inc}(1,463) = .50$ . Addition of the passage of both parts of the CAHSEE to the equation did



not improve  $R^2$ . This pattern of results suggests that 9.2% of the variability in composite ACT scores is predicted by 10th grade GPA. Gender, ethnicity, and language proficiency are significant and explain an additional 8.0% variance in composite ACT scores. However, the passage of both parts of the CAHSEE adds no further prediction to composite ACT scores.

The standardized beta of  $-.40$  for Hispanics in the final model testing Hypothesis #3 indicates a main and negative effect of being Hispanic or Latino on performance with the ACT in reference to Whites. Similar results were found for African American or Black students with a standardized beta of  $-.41$ . A main and negative effect was also found of being an English Learner (EL) student on performance with the ACT in reference to English Only (EO) students with a standardized beta of  $-.21$ .

Table 4.9.

*Correlation Matrix for Hypothesis #3: California High School Exit Exam  
Passage and ACT Scores*

	Compo- Site ACT Scores	10th grade GPA	Gender	Hispanic or Latino	African American or Black	Other Ethni- city	IFEP	RFEP	EL
10th grade GPA	.30								
Gender	-.01	.11							
Hispanic or Latino	-.08	.00	.02						
African Am. or Black	-.06	-.06	-.02	-.79					
Other Ethnicity	.13	.14	-.01	-.36	-.08				
IFEP	.01	-.08	-.02	.14	-.13	.03			
RFEP	-.02	-.01	.05	.12	-.10	.01	-.25		
EL	-.17	.01	.06	.10	-.13	-.06	-.26	-.21	

Pass									
Both									
Parts									
Of CAHSEE	.12	.44	-.01	.08	-.12	.08	-.02	-.05	.01
N = 473									

Table 4.10.

*Sequential Regression Model for Hypothesis #3: California High School Exit Exam  
Passage and ACT Scores*

Step	Variables	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	R <sup>2</sup> Change	B	β
1.Model 1		0.30	0.09	0.09	0.09*		
	10th grade GPA					1.31	0.30*
2.Model 2		0.41	0.17	0.16	0.08*		
	10th grade GPA					1.25	0.29*
	Gender					-0.21	-0.03
	Hispanic or Latino					-3.89	-0.40*
	African American						
	or Black					-4.62	-0.41*
	Other Ethnicity					-2.14	-0.10
	IFEP					-0.42	-0.05
	RFEP					-0.64	-0.06
	EL					-2.18	-0.21*

3.Model 3	0.42	0.17
-----------	------	------

10th grade GPA

Gender

Hispanic or Latino

African American

or Black

Other Ethnicity

IFEP

RFEP

EL

Pass both parts of CAHSEE

80

---

\*p < .05

0.16

0.00

1.32      0.31\*

-0.22      -0.03

-3.87      -0.40\*

-4.65      -0.41\*

-2.13      -0.10

-0.42      -0.05

-0.67      -0.06

-2.19      -0.21\*

0.31      -0.03

---

#### Hypothesis #4: California High School Exit Exam English Language Arts Scale Scores and 11th Grade GPA

Hypothesis #4 stated that initial CAHSEE ELA scale scores will explain variance in 11th grade GPA above and beyond, gender, ethnicity, and language proficiency. Table 4.11 shows the mean and standard deviation for the predictor variables CAHSEE ELA scale scores and 10th grade GPA, and the criterion variable 11th grade GPA. Table 4.12 displays the correlations among variables used to test Hypothesis #4.

Table 4.13 displays the  $R$ ,  $R^2$ , adjusted  $R^2$ ,  $R^2$  change, the unstandardized coefficients ( $B$ ), and the standardized regression coefficients ( $\beta$ ) after entry of all nine IVs. After step 3, with all IVs in the equation,  $R^2 = .18$ ,  $F(9,1027) = 25.17$ ,  $p < .05$ . The Adjusted  $R^2$  value of .17 indicates that less than a fifth of the variability in 11th grade GPA is predicted by 10th grade GPA, gender, ethnicity, language proficiency, and CAHSEE ELA scale scores.

After step 1, with 10th grade GPA in the equation,  $R^2 = .16$ ,  $F_{inc}(1,1027) = 199.42$ ,  $p < .05$ . After step 2, with gender, ethnicity, and language proficiency added to the prediction of 11th grade GPA,  $\Delta R^2 = .02$ ,  $F_{inc}(1,1027) =$

3.38,  $p < .05$ . Addition of gender, ethnicity, and language proficiency to the equation with 10th grade GPA results in a significant increment in  $R^2$ .

Table 4.11.

Descriptive Statistics for Hypothesis #4

Variable	<i>M</i>	<i>SD</i>
11th grade GPA	1.83	1.03
10th Grade GPA	2.20	0.89
CAHSEE ELA Scale Scores	376.41	33.14
Gender	0.52	0.50
Hispanic or Latino	0.78	0.41
African American or Black	0.15	0.36
Other Ethnicity	0.02	0.15
IFEP	0.22	0.41
RFEP	0.13	0.34
EL	0.21	0.41
N = 1037		

After step 3, with CAHSEE ELA scale scores added to prediction of 11th grade GPA by 10th grade GPA, gender, ethnicity, and language proficiency,  $\Delta R^2 = .00$  (adjusted  $R^2$



= .17),  $F_{inc}(1,1027) = .36$ . Addition of CAHSEE ELA scale scores to the equation did not improve  $R^2$ . This pattern of results suggests that 16.2% of the variability in 11th grade GPA is predicted by 10th grade GPA. Gender, ethnicity, and language proficiency are significant and explain a slight 1.8% variance in 11th grade GPA. CAHSEE ELA scale scores do not explain any additional variance in 11th grade GPA.

The standardized beta of .09 for Females in the final model testing Hypothesis #4 indicates a main and positive effect of being Female on performance with the ACT in reference to Males. A main and negative effect was found of being an English Learner (EL) student on performance with the ACT in reference to English Only (EO) students with a standardized beta of -.07.

Table 4.12.

*Correlation Matrix for Hypothesis #4: California High School Exit Exam English Language Arts Scale Scores and 11th Grade GPA*

	11th grade GPA	10th grade GPA	Gender	Hispanic or Latino	African American or Black	Other Ethni- city	IFEP	RFEP	EL
10th grade GPA	.40								
Gender	.15	.13							
Hispanic or Latino	.00	-.02	-.02						
African Am. or Black	-.05	-.02	-.01	-.81					
Other Ethnicity	.11	.13	.01	-.30	-.07				
IFEP	.03	-.03	-.01	.15	-.14	.02			
RFEP	.02	-.01	.03	.08	-.06	.00	-.20		
EL	-.07	-.01	.02	.14	-.13	-.07	-.27	-.20	

CAHSEE

ELA

Scale

Scores

.23

.52

.03

-.01

-.06

.09

-.03

-.01

-.02

N = 1037

.

Table 4.13.

*Sequential Regression Model for Hypothesis #4: California High School Exit Exam  
English Language Arts Scale Scores and 11th Grade GPA*

Step	Variables	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	R <sup>2</sup> Change	B	$\beta$
1.	Model 1	0.40	0.16	0.16	0.16*		
	10th grade GPA					0.46	0.31*
2.	Model 2	0.43	0.18	0.17	0.02*		
	10th grade GPA					0.44	0.38*
	Gender					0.19	0.09*
	Hispanic or Latino					-0.06	-0.02
	African American						
	or Black					-0.17	-0.06
	Other Ethnicity					0.31	0.05
	IFEP					0.04	0.02
	RFEP					0.03	0.01
	EL					-0.17	-0.07*

3.Model 3	0.43	0.18
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10th grade GPA

Gender

Hispanic or Latino

African American

or Black

Other Ethnicity

IFEP

RFEP

EL

CAHSEE ELA scale scores

---

\*p < .05

0.17

0.00

0.43      0.37\*

0.19      0.09\*

-0.05      -0.02

-0.16      -0.06

0.31      0.05

0.04      0.02

0.03      0.01

-0.17      -0.07\*

0.00      0.02

---

Hypothesis #5: California High School Exit Exam  
Math Scale Scores and 11th Grade GPA

Hypothesis #5 stated that initial CAHSEE Math scale scores will explain variance in 11th grade GPA above and beyond gender, ethnicity, and language proficiency. Table 4.14 shows the mean and standard deviation for the predictor variables CAHSEE Math scores and 10th grade GPA, and the criterion variable 11th grade GPA. Table 4.15 displays the correlations among variables used to test Hypothesis #5.

Table 4.16 displays the  $R$ ,  $R^2$ , adjusted  $R^2$ ,  $R^2$  change, the unstandardized coefficients ( $B$ ), and the standardized regression coefficients ( $\beta$ ) after entry of all nine IVs. After step 3, with all IVs in the equation,  $R^2 = .18$ ,  $F(9,1027) = 25.06$ ,  $p < .05$ . The Adjusted  $R^2$  value of .17 indicates that 17% of the variability in 11th grade GPA is predicted by 10th grade GPA, gender, ethnicity, language proficiency, and CAHSEE Math scale scores.

After step 1, with 10th grade GPA in the equation,  $R^2 = .16$ ,  $F_{inc}(1,1027) = 194.37$ ,  $p < .05$ . After step 2, with gender, ethnicity, and language proficiency added to the prediction of 11th grade GPA,  $\Delta R^2 = .02$ ,  $F_{inc}(1,1027) = 3.43$ ,  $p < .05$ . Addition of gender, ethnicity, and language

proficiency to the equation with 10th grade GPA results in a significant increase in  $R^2$ .

Table 4.14.

*Descriptive Statistics for Hypothesis #5*

Variable	<i>M</i>	<i>SD</i>
11th grade GPA	1.84	1.03
10th Grade GPA	2.20	0.89
CAHSEE Math Scale Scores	377.37	34.09
Gender	0.52	0.50
Hispanic or Latino	0.78	0.41
African American or Black	0.15	0.36
Other Ethnicity	0.02	0.15
IFEP	0.22	0.41
RFEP	0.13	0.34
EL	0.21	0.41
N = 1037		

After step 3, with CAHSEE Math scale scores added to prediction of 11th grade GPA by 10th grade GPA, gender, ethnicity, and language proficiency,  $\Delta R^2 = .00$  (adjusted  $R^2 = .17$ ),  $F_{inc}(1,1027) = 3.48$ . Addition of CAHSEE Math scale



scores to the equation did not significantly improve  $R^2$ . This pattern of results suggests that 16.0% of the variability in 11th grade GPA is predicted by 10th grade GPA. Gender, ethnicity, and language proficiency are significant and explain an additional 1.9% variance in 11th grade GPA. CAHSEE Math scale scores are not significant and do not explain any additional variance in 11th grade GPA.

The standardized beta of .10 for Females in the final model testing Hypothesis #5 indicates a main and positive effect of being Female on performance with the ACT in reference to Males. A main and negative effect was found of being an English Learner (EL) student on performance with the ACT in reference to English Only (EO) students, with a standardized beta of -.07.

Table 4.15.

*Correlation Matrix for Hypothesis #5: California High School Exit Exam  
Math Scale Scores and 11th Grade GPA*

	11th grade GPA	10th grade GPA	Gender	Hispanic or Latino	African American or Black	Other Ethni- city	IFEP	RFEP	EL
10th grade GPA	.40								
Gender	.14	.14							
Hispanic or Latino	-.00	-.02	-.02						
African Am. or Black	-.05	-.02	-.01	-.81					
Other Ethnicity	.11	.13	.01	-.30	-.07				
IFEP	.03	-.04	-.01	.15	-.15	.02			
RFEP	.02	-.01	.03	.08	-.06	.00	-.20		
EL	-.07	.00	.02	.13	-.13	-.07	-.27	-.20	

CAHSEE  
Math  
Scale  
Scores

.28

.61

-.03

.02

-.09

.11

-.03

-.02

-.01

N = 1037

Table 4.16.

*Sequential Regression Model for Hypothesis #5: California High School Exit Exam Math Scale Scores and 11th Grade GPA*

Step	Variables	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	R <sup>2</sup> Change	B	$\beta$
1.	Model 1	0.40	0.16	0.16	0.16*		
	10th grade GPA					0.46	0.40*
2.	Model 2	0.42	0.18	0.17	0.02*		
	10th grade GPA					0.43	0.38*
	Gender					0.18	0.09*
	Hispanic or Latino					-0.06	-0.02
	African American						
	or Black					-0.19	-0.07
	Other Ethnicity					0.30	0.04
	IFEP					0.04	0.01
	RFEP					0.03	0.01
	EL					-0.18	-0.07*

3.Model 3	0.42	0.18
-----------	------	------

10th grade GPA

Gender

Hispanic or Latino

African American

or Black

Other Ethnicity

IFEP

RFEP

EL

CAHSEE Math scale scores

---

\*p < .05

0.17

0.00

0.39      0.34\*

0.20      0.10\*

-0.05      -0.02

-0.16      -0.06

0.29      0.04

0.04      0.02

0.03      0.01

-0.18      -0.07\*

0.00      0.07

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Hypothesis #6: California High School Exit Exam  
Passage and 11th Grade GPA

Hypothesis #6 stated that initial CAHSEE passage of both ELA and Math parts will explain variance in 11th grade GPA above and beyond gender, ethnicity, and language proficiency. Table 4.17 shows the mean and standard deviation for the predictor variables 10th grade GPA and passing both parts of the CAHSEE, and the criterion variable 11th grade GPA. Table 4.18 displays the correlations among variables used to test Hypothesis #6.

Table 4.19 displays the  $R$ ,  $R^2$ , adjusted  $R^2$ ,  $R^2$  change, the unstandardized coefficients ( $B$ ), and the standardized regression coefficients ( $\beta$ ) after entry of all nine IVs. After step 3, with all IVs in the equation,  $R^2 = .17$ ,  $F(9,1077) = 24.79$ ,  $p < .05$ . The Adjusted  $R^2$  value of .17 indicates that 17% of the variability in 11th grade GPA is predicted by 10th grade GPA, gender, ethnicity, language proficiency, and passing both parts of the CAHSEE.

After step 1, with 10th grade GPA in the equation,  $R^2 = .15$ ,  $F_{inc}(1,1077) = 195.52$ ,  $p < .05$ . After step 2, with gender, ethnicity, and language proficiency added to the prediction of 11th grade GPA,  $\Delta R^2 = .02$ ,  $F_{inc}(1,1077) = 3.47$ ,  $p < .05$ . Addition of gender, ethnicity, and language

proficiency to the equation with 10th grade GPA results in a significant increase in  $R^2$ .

Table 4.17.

*Descriptive Statistics for Hypothesis #6*

Variable	<i>M</i>	<i>SD</i>
11th grade GPA	1.84	1.03
10th Grade GPA	2.18	0.91
Pass Initial CAHSEE	0.69	0.46
Gender	0.52	0.50
Hispanic or Latino	0.79	0.41
African American or Black	0.15	0.36
Other Ethnicity	0.02	0.15
IFEP	0.22	0.41
RFEP	0.13	0.34
EL	0.21	0.41
N = 1087		

After step 3, with passage of both parts of the CAHSEE added to prediction of 11th grade GPA by 10th grade GPA, gender, ethnicity, and language proficiency,  $\Delta R^2 = .00$  (adjusted  $R^2 = .17$ ),  $F_{inc}(1,1077) = .28$ . Addition of the



passage of both parts of the CAHSEE to the equation did not improve  $R^2$ . This pattern of results suggests that 15.0% of the variability in 11th grade GPA is predicted by 10th grade GPA. Gender, ethnicity, and language proficiency are significant and explain an additional 1.9% variance in 11th grade GPA. Passage of both parts of the CAHSEE did not significantly explain any additional variance in 11th grade GPA.

The standardized beta of .09 for Females in the final model testing Hypothesis #6 indicates a main and positive effect of being Female on performance with the ACT in reference to Males. A main and negative effect was found of being an English Learner (EL) student on performance with the ACT in reference to English Only (EO) students with a standardized beta of -.07.

Table 4.18.

*Correlation Matrix for Hypothesis #6: California High School Exit Exam  
Passage and 11th Grade GPA*

	11th grade GPA	10th grade GPA	Gender	Hispanic or Latino	African American or Black	Other Ethni- city	IFEP	RFEP	EL
10th grade GPA	.39								
Gender	.15	.15							
Hispanic or Latino	.00	-.04	-.02						
African Am. or Black	-.06	-.01	-.01	-.81					
Other Ethnicity	.10	.12	.01	-.30	-.07				
IFEP	.03	-.03	-.01	.14	-.14	.02			
RFEP	.02	.00	.02	.07	-.05	-.01	-.20		
EL	-.07	-.01	.03	.14	-.13	-.07	-.27	-.20	

Pass									
Both									
Parts of									
CAHSEE	.17	.45	.03	.01	-.06	.08	-.02	.01	-.03
N = 1087									

Table 4.19.

*Sequential Regression Model for Hypothesis #6: California High School Exit Exam  
Passage and 11th Grade GPA*

Step	Variables	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	R <sup>2</sup> Change	B	$\beta$
1.	Model 1	0.39	0.15	0.15	0.15*		.
	10th grade GPA					0.44	0.39*
2.	Model 2	0.41	0.17	0.17	0.02*		
	10th grade GPA					0.42	0.37*
	Gender					0.19	0.09*
	Hispanic or Latino					-0.04	-0.02
	African American						
	or Black					-0.20	-0.07
	Other Ethnicity					0.29	0.04
	IFEP					0.02	0.01
	RFEP					-0.01	-0.00
	EL					-0.18	-0.07*

3.Model 3	0.41	0.17
10th grade GPA		
Gender		
Hispanic or Latino		
African American		
or Black		
Other Ethnicity		
IFEP		
RFEP		
EL		
Pass both parts of CAHSEE		

---

\*p < .05

0.17

0.00

0.43

0.38\*

0.19

0.09\*

-0.04

-0.02

-0.20

-0.07

0.29

0.04

0.02

0.01

-0.07

-0.00

-0.18

-0.07\*

-0.04

-0.02

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## CHAPTER FIVE

### DISCUSSION

This chapter is comprised of three sections. The first section provides a summary and the purpose of the study. The second section is a discussion of the key findings as they relate to each research question and the limitations present within the study. The third section provides implications for future research.

#### Summary of the Study

High school students in the State of California do not have a choice regarding whether or not they will participate in the administration of the CAHSEE. It is a requirement mandated by California Education Code sections 60850 and 60851. Not only does this mandate add to the seemingly endless repertoire of standardized tests students are required to take during their academic career, the CAHSEE has high-stakes consequences attached to it. Students are required to pass ELA and Math portions of the CAHSEE in order to be eligible to graduate from high school with a regular diploma.

The research surrounding the CAHSEE and student achievement has focused on identifying which subgroups are being negatively impacted by the exit exam requirement (Reardon, et al., 2010; Holme, et al., 2010; Reardon, et al., 2009). The results have been mixed regarding the overall impact of exit exams on student achievement. However, there is consensus that this requirement is affecting students of color, females, English learners, and low-income students more negatively than other subgroups. Mason (2008) found that student achievement was low in some students that pass both parts of the CAHSEE, but that this underachievement was not motivational.

This study was conducted using data from two high schools in the same school district in Southern California. The original data set was comprised of a sample of 1422 students with available corresponding demographic data. Demographic variables in this study included gender, ethnicity and language proficiency. The demographic variables were control variables added to heighten the test of other variables in the study. Measures of achievement in the study included 10th grade GPA, 11th grade GPA, ACT scores, CAHSEE ELA scale scores, CAHSEE Math scale scores, and overall CAHSEE passage or failure.



## Purpose of the Study

The primary goal of this correlational study was to examine the relationships between initial CAHSEE performance and the academic success of high school students. This study evaluated the hypotheses that initial CAHSEE performance would improve the predictability of 11th grade GPA and ACT scores. These criterion variables were chosen as academic success indicators because they have been referenced in previous literature as predictors of future dropout (Bowers, 2010) and college admission (Noble, 2003). An understanding of these relationships following the initial CAHSEE administration would allow for early intervention planning, thereby improving high school student achievement and ultimately graduation rates.

Self-determination theory, a motivational theory, was examined in this study relative to high-stakes testing and academic success. This theory supports the belief that people are drawn to gaining new knowledge and developing new skills. According to SDT, motivation to acquire newly sought knowledge and skills are due to the functional significance of a particular event (Ryan and Deci, 2000). Functional significance is classified into three categories: informational, controlling, and amotivating.

When events are informational, positive feedback is provided which enhances motivation. When events are controlling, there is pressure to obtain a specific outcome, which can reduce motivation. Amotivating events occur when tasks are too challenging or negative feedback is provided.

### Discussion of Key Findings

A total of six regression tests were performed to address the two research questions in this study. The first set of three regressions tested the relationship between initial CAHSEE performance and ACT scores of 11th grade high school students. The second set of three regressions tested the relationship between initial CAHSEE performance and 11th grade GPA of high school students.

#### Research Question #1

What is the relationship between initial CAHSEE performance and ACT scores? The analysis identified a significant effect on the predictability of the first two hypotheses in this study, but not the third one. Initial CAHSEE performance did improve the predictability of ACT scores as a measure of academic success. When CAHSEE ELA scale scores and CAHSEE Math scale scores were added to the

third step of the regression models, additional variance was explained by 3% and 4% respectively. However, passing both parts of the CAHSEE did not produce a significant effect on the predictability of ACT scores, as no additional variance was explained in the third step of the model.

These results suggest that students who fail at least one part of the CAHSEE may be appropriately identified as needing academic interventions to increase student achievement toward graduation. However, as the model evaluating students who passed both parts of the CAHSEE did not explain additional variance in ACT scores, this model would not adequately identify students requiring academic interventions to increase student achievement. These results would also suggest that where students are on the spectrum of scores influences their subsequent academic performance.

#### Research Question #2

What is the relationship between initial CAHSEE performance and 11th grade GPA? The analysis did not support the second three hypotheses in this study. Initial CAHSEE performance did not improve the predictability of 11th grade GPA scores as a measure of academic success.

This was true for all three regression models using CAHSEE ELA scale scores, CAHSEE Math scale scores, and CAHSEE passage as the predictor variable in the third step of each model. No additional variance in the models was explained for hypotheses #4, #5, and #6.

These findings would suggest that CAHSEE performance does not add to the prediction of 11th grade GPA above 10th grade GPA and student demographic factors. Therefore, it does not appear that the addition of the CAHSEE requirement adds to the ability of educators to identify students requiring academic interventions to improve student achievement. As one of the goals of the CAHSEE is to improve overall pupil achievement as a pathway to graduation, academic interventions need to be considered for all students, not just those who fail the CAHSEE. For both criterion variables, just pass or fail does not improve the predictability of academic achievement from the CAHSEE. Ultimately, the students care how they perform subsequent to the initial CAHSEE administration.

Self-determination theory suggests that more rigorous academic requirements will motivate students to be more successful. However, this does not appear to be the case with respect to the CAHSEE in this study. When examining

student achievement, events such as exit exams have the potential to be controlling and amotivating due to the high stakes attached to them (Ryan and Weinstein, 2009).

However, SDT supports an informational functional significance with respect to a successful exit exam policy on two levels. First, if students were provided with positive, effective feedback with respect to their performance on exit exams, motivation would be enhanced. Second, if educators used the results of these events to evaluate and plan specific, targeted strategic interventions, student achievement would increase. However, if exit exams continue to be attached to high-stakes consequences such as high school graduation, student motivation will not increase.

This study is an important addition to existing literature for two reasons. First, prior research on the CAHSEE and student achievement has not focused specifically on grades because they are "...partly a function of the courses they take" (Reardon, et al., 2010, p. 504). This study does examine student GPA as a measure of subsequent academic success. Although students take different courses according to their future endeavors, each student is required to take the CAHSEE regardless of their post-

secondary plans. It is important to understand that each student can be academically successful even if they are not college bound.

Second, the ultimate goals of the CAHSEE are to ensure that each student leaves high school with a set of basic skills and to improve overall pupil achievement (CDE, 2011). Existing student achievement research has focused on students with prior low achievement (Reardon, et al., 2009), students who barely failed the CAHSEE (Reardon, et al., 2010), and only students who passed the CAHSEE (Mason, 2008). The current study included student-level data for all 11th grade students presently enrolled at two comprehensive high schools at the time of data collection. By analyzing student-level data at all achievement levels, a better model could be developed to determine whether or not there were relationships between the CAHSEE and the subsequent academic success of high school students.

#### Limitations of the Study

The proposed study does not include students receiving special education services, as this population is no longer subject to passing the CAHSEE as a requirement to receive a high school diploma. The proposed study also does not

incorporate socioeconomic status, attendance, or grade retention as demographic variables in the regression equation as they were not available from the school district at the time of data collection.

Certain limitations should also be considered in interpreting the results of this study. The researcher used a convenience sample of students from two high schools within the same school district. Although the demographics of this sample represent a diverse population, caution must always be exercised when overgeneralizing results of the study to similar schools or school districts. This study was comprised of a large Hispanic or Latino population.

Also, students who were not currently enrolled at the time of data collection were not included in the study. This caused the researcher to exclude data pertaining to students who had already dropped out of high school. In addition, not all students in the study had taken the ACT, either because they had no intention of attending college or had planned to take it after the 11th grade school year.

### Implications for Policy

The amount of money that is being spent every year on the administration of the CAHSEE coupled the results of

this study which found that performance on the CAHSEE does not add to the predictability of future high school academic success, suggests that recommendations should be made by educational leaders to eliminate the CAHSEE. The findings of this study do not suggest that the CAHSEE is meeting the goals that were intended at its inception. A series of questions evolve from this study with respect to the CAHSEE requirement and its goals:

1. If there is no predictability of future academic success from the CAHSEE, how can the CAHSEE be attributed to increased student achievement?
2. If there is no predictive relationship between the CAHSEE and future student achievement, is there value to this requirement?
3. Are resources being wasted on the administration of the CAHSEE which could be better utilized in other capacities to increase student achievement?
4. Are the risks of adverse effects relative to this requirement outweighing the benefits of the CAHSEE in such areas as motivation and high school dropout?
5. What are the implications for the ethnicity and language proficiency variables which exhibited main



and negative effects on academic success in this study?

### Implications for Future Research

Future research which leads to identifying factors which predict increased student achievement as measured by GPA are needed. Even if the CAHSEE were eliminated as a high-stakes graduation requirement, this would be necessary to determine the necessity for academic interventions. The ultimate goal is still to identify the students who need additional support to achieve academic success and graduate from high school. Additional research that examines ethnicity and language proficiency relative to academic success is suggested by this study.

Qualitative research in the form of interviews of students to explore the motivational aspect of student achievement would be beneficial. Interviews with students who passed the CAHSEE and then dropped out of high school could shed light on the topic of motivation. Using the premise of SDT, additional study relative to student perceptions of the CAHSEE and academic success as informational, controlling, or amotivational would enhance the current study.

Longitudinal studies which follow the effects of the CAHSEE through 12th grade would also add to the model. This study examined initial CAHSEE performance on academic success as a pathway toward identifying students needing specific, targeted academic interventions. With this in mind, an analysis of the academic achievement resulting from interventions implemented according to the results of this type of study would be beneficial for generalization to similar populations.

### Conclusion

The purpose of this study was to examine the relationships between the CAHSEE and 11th grade GPA and ACT scores as measures of academic success. Overall results of this study concluded that CAHSEE ELA scale scores, CAHSEE Math scale scores, and CAHSEE passage do not significantly predict 11th grade GPA; and CAHSEE passage does not significantly predict ACT scores. However, CAHSEE ELA scale scores and CAHSEE Math scale scores do predict ACT scores above and beyond 10th grade GPA, gender, ethnicity, and language proficiency. This finding suggests that the model is appropriate for students who are college bound, but may struggle on one or both parts of the CAHSEE.

Unfortunately, not all California high school students are college bound. However, all students must be afforded the opportunity to be successful with or without the CAHSEE requirement.

Former California State Superintendent of Public Instruction, Jack O'Connell, in a response to the Reardon, et al., (2009) study, reiterated that "the top priority of (his) administration is to close the achievement gap...and hold high schools accountable for the academic achievement of all students" (Tasci, 2009). Therefore, the ability to predict the academic success of students at the high school level would enable educators to implement specific, targeted academic interventions at the earliest point. Beyond the CAHSEE requirement, as educators we must find a pathway for all students to stay in school and obtain a high school diploma.

Walden and Kritsonis (2008) urge us to consider the anxiety about failing exit exams that drives some students to drop out and others to feel that there is no alternative if the exam is actually failed. In fact, states requiring high school exit exams have lower high school completion rates (Glen, 2006). The goal of student achievement, workforce preparedness, and college preparation during the

high school years seems to have been lost in the exit exam shuffle.

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