ASSESSING THE RELATIONSHIPS AMONG PSAT AND TAKS SCORES IN SELECTED TEXAS HIGH SCHOOLS

A Dissertation

by

ERIC DARYL WILSON

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2004

Major Subject: Educational Human Resource Development

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Approved as to style and content by:

John R. Hoyle (Chair of Committee)	Walter F. Stenning (Member)
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ABSTRACT

Assessing the Relationships Among PSAT and TAKS Scores in Selected Texas High Schools. (August 2004)

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The purpose of this research study was to determine the relationships among PSAT scores and TAKS scores in selected Texas high schools in order to inform state policy makers, school district administrators and teachers as they strive to implement policies to improve student achievement. In addition the findings of this study can be vital for curriculum planning pre-K-16.

The population for this study was the 3,243 sophomores at the 55 Texas high schools involved in the Texas AP/IB Center's PSAT Pilot Program. The schools participating in this program were selected based on the high proportion of students from low-income homes and the lack of an AP program or low AP program participation. Students at participating high schools were predominantly minority and from homes identified by the Texas Education Agency as low socioeconomic status.

This study's significance is based on its potential to provide school district administrators additional information on which to base decisions regarding budget

allocations for Advanced Placement programs. With greater stress on high-stakes testing and greater competition to enter higher education, Texas school districts will have initial data upon which to strengthen curricular offerings. Additionally, this study will provide policymakers at the state and local level the data necessary to make decisions when marketing and promoting the Advanced Placement program.

Research findings of this study included:

1. The degree of association between PSAT score and TAKS scores was moderate.
2. Caucasian students consistently outperformed their minority counterparts on all examinations.
3. Economically disadvantaged students achieved lower scores than their more affluent counterparts on all tests.
4. Females outperformed males on most exams, but the results are not conclusive.

DEDICATION

This work is dedicated to my parents, Leroy Wilson and Gloria Ray, who instilled in me the value of an education and encouraged me to pursue all of my dreams. They provided me abundant and selfless love and support and for that I will be forever grateful.

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CHAPTER I

INTRODUCTION

Background of the Study

Universal compulsory primary and secondary education serve to instill social norms and to provide a foundation for the world of work or for post-secondary education. Historically, high school graduates possessed enough knowledge to earn a living wage without pursuing additional schooling. However, with recent technological advances and the increasingly specialized needs of businesses a high school education is no longer adequate. Students must acquire some form of post-secondary education. Post-secondary education equips today's students with the skills necessary to secure well-paying jobs and thereby increase their earning power (Monk-Turner, 1994).

With the growing demand for post-secondary education, many colleges and universities are becoming more competitive. As a result, high school students must present strong academic records and demonstrate that they have the ability to succeed in college by completing increasingly rigorous curricula (Isaacs, 2001). This necessity is exemplified by the State of Texas' transition from TAAS to TAKS testing as well as the expansion of AP courses (Curry, MacDonald, and Morgan, 1999). Since its inception in 1955, the College Board's Advanced Placement program has expanded to over 13,000 high schools across the country and millions of students have taken AP courses and

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This dissertation follows the style and format of the *Journal of Educational Research*.

exams (Curry, MacDonald, and Morgan, 1999). Students who participate in the College Board's AP program take college-level coursework during high school and, when coupled with satisfactory performance on the corresponding Advanced Placement exam, will qualify for college course credit (College Entrance Examination Board, 2001). Some high schools even augment the grade point average (GPA) of students who enroll in AP courses, thereby making this group of students more competitive (Monk-Turner, 1994). Studies have indicated that students who take AP courses tend to perform better in college than their counterparts who did not take AP courses (College Entrance Examination Board, 2002) Additional research has shown that, for most subjects, PSAT scores are highly correlated with future success on AP exams (College Entrance Examination Board, 1997).

Gaining college course credit helps to defray the escalating costs of college and university tuition and may shorten the amount of time a student spends in school. Reducing college attendance costs is especially important for those students who come from lower-income families. In addition to the oftentimes daunting task of seeking admission to college, these students shoulder the added burden of financing college. Indeed, "Financial aid is often a deciding factor because minority students, many of whom are the first in their family to attend college, are less willing to take on burdensome college loans" (Vo, 2002). It is also important to notice that, "In the United States, racial identity and economic status are tightly intertwined" (Newitz and Wray, 1997). Nationally, Hispanics will soon make up the largest single ethnic minority group and by 2020 in the state of Texas they will comprise the single largest minority group (Texas State Data Center, 2001). As the state

becomes increasingly Hispanic, means must be sought to educate this growing segment of the population.

Statement of the Problem

The state of Texas is growing and along with this growth comes the necessity to harbor a more educated populace. With the introduction of the TAKS test, steps have been taken by state educational leaders to increase the rigor of secondary school coursework and to ensure that high school graduates are better prepared than ever before. However, increased rigor in high school education will not be sufficient to meet the demands of employers. Steps must be taken to graduate collegiately prepared and academically competitive students from Texas public high schools.

Giving students the upper hand relative to their counterparts across the country ensures a secure economic future for the students and for the state. Education has the power to break down barriers and level the playing field for students of color and from low-income homes, giving them access to jobs and opportunities that would otherwise have been unavailable. It promises hope—the hope of a better life for disadvantaged students by opening the doors to greater opportunity for themselves and their posterity and the hope for a state that is able to remain fiscally solvent.

Considering the current occupational and economic challenges, it is imperative that increasing numbers of talented high school students seek a post-secondary education. Higher education will offer the possibility of better jobs and improved standards of living

for this group of students. In addition, when these students become parents their children will be more likely to earn a college degree (National Center for Education Statistics [NCES], 2002).

As the state of Texas strives to increase academic rigor in primary and secondary schools, research is needed on the manner in which various programs and exams interrelate. Studies have demonstrated the relationship between the PSAT and AP exams (College Entrance Examination Board, 1997); however, there is currently no information regarding the relationships among PSAT scores and TAKS scores. This relationship needs to be established in order to increase educational opportunities for more students, which in turn promotes the general welfare and a democratic way of life.

Purpose of the Study

The purpose of this research study was to determine the relationships among PSAT scores and TAKS scores in selected Texas high schools in order to inform state policy makers, school district administrators and teachers as they strive to implement policies to improve student achievement. In addition the findings of this study can be vital for curriculum planning pre-K-16.

Research Questions

The following research questions were answered in the course of this study:

1. What was the association between PSAT scores (Verbal, Math, and Writing Skills) and TAKS scores (Reading, Math, Science and History)?
2. Are there significant differences in PSAT scores and TAKS scores by ethnicity, gender, and economic disadvantage?

Definition of Terms

There are several terms that need to be operationally defined before an investigation on the stated relationships can be performed.

Advanced Placement (AP): The Advanced Placement Program gives high school students exposure to college level material through involvement in AP courses. Students then have an opportunity to demonstrate mastery of the material through an AP Exam. Examinees who achieve an appropriate score will be given college course credit for the subject. Appropriate scores range from 2 to 4 and vary by university (P. Flores, personal communication, March 20, 2003).

Preliminary Scholastic Aptitude Test (PSAT): The PSAT is comprised of three sections: Verbal, Math and Writing Skills and is similar to the SAT used for college admissions and scholarship decisions. Students take the PSAT to prepare for the SAT, to asses their skills and to compete for national scholarships (P. Flores, personal communication, March 20, 2003).

Texas Assessment of Knowledge and Skills (TAKS): TAKS is the statewide assessment that replaces the Texas Assessment of Academic Skills. Students are tested in

reading, writing, mathematics, social studies, and science. The exams are based on the state curriculum, are knowledge and skills based, and are designed to ensure school accountability for student achievement (Texas Education Agency [TEA], 2003c).

Assumptions

The following assumptions were made:

1. The data received from the Texas AP/IB Center and the Texas Education Agency were accurate.
2. The researcher was impartial in the analysis of the data.
3. Interpretation of the data collected accurately reflected what was intended.

Limitations

The following limitations were recognized:

1. The research was limited to the acquisition of information from a literature review.
2. The data collected is limited to the 55 Texas high schools that were involved in this dissertation.
3. The findings of this dissertation were generalizable only to the high schools involved in the research, though they may have implications for all high schools.

Significance Statement

Nearly fifty percent of Texas public high schools are classified as low socioeconomic status (SES) as defined by the Texas Education Agency. This dissertation will examine the 55 targeted low SES Texas public high schools with low Advanced Placement participation and assess the relationships among PSAT scores and TAKS scores. As a result, this study will provide school district administrators additional information on which to base decisions regarding budget allocations for Advanced Placement programs. With greater stress on high-stakes testing and greater competition to enter higher education, Texas school districts will have initial data upon which to strengthen curricular offerings. Additionally, this study will provide policymakers at the state and local level the data necessary to make decisions when marketing and promoting the Advanced Placement program.

Contents of the Dissertation

The dissertation is divided into five major chapters. Chapter I contains an introduction/background of the study, the statement of the problem, the purpose of the study, the research questions, the definition of terms, the assumptions and limitations of the study, and a significance statement. Chapter II consists of a review of the literature. Chapter III includes the methodology and procedures. Chapter IV contains the analysis of

the data set obtained from TEA and the Texas AP/IB center. Chapter V consists of the researcher's summary, conclusions, and recommendations.

CHAPTER II

REVIEW OF THE LITERATURE

Demographics and Enrollment

Nearly one hundred years ago colleges and universities enrolled about 232,000 students, a mere 0.3% of the population. At the outbreak of World War II the number of undergraduates had swollen to 1.4 million students and following the war, the college population soared to 2.4 million undergraduates (The changing faces of the American college campus , 1993). Undergraduate enrollments have increased in every decade since the 1970's and are projected to continue increasing. Furthermore, unlike in previous decades, undergraduate enrollment at four-year institutions is projected to outpace enrollment at two-year institutions in this decade (NCES, 2002, p. 47).

Throughout the 1950's 94% of the students enrolled in colleges and universities were White and the domination of higher education by White students is a trend that has continued until the present. However, minority students are gaining ground; by 1991 greater than 1 student in 6 was non-white (The changing faces of the American college campus, 1993). Over the past 10 years, the proportion of white students has decreased in relationship to the number of minority students. While enrollments are rising, the proportions of minorities in education has changed little over the course of the 1990's. In 1999-2000 close to one-third of undergraduates were non-white, up from about one quarter of undergraduates in 1989-90 (Choy, 2002; NCES, 2002; Horn and Khazzoom, 1993).

However, “African Americans and Hispanics are underrepresented relative to the traditional college age population as a whole” (Choy, 2002, p.9).

Part of the disparity between White and minority enrollments can be attributed to the gaps in various rates between the groups. Nationally, Hispanic and Black students trail White students in high school completion rates. While completion rates fluctuate for Hispanics and Blacks, the rates of White students completing high school tend to remain stable (Carter and Wilson, 1996). It is no surprise then that White students participate in college at higher rates that either Hispanics or African Americans (Carter and Wilson, 1996). In addition to a gap in completions rates, there also exists a gap in immediate enrollment rates between Whites and minorities. Between 1972 and 2000, immediate enrollment from high school graduates rose from 49 percent to 63 percent. During this same time period, the immediate enrollment rate for Hispanics remained nearly constant, resulting in a gap between Hispanic and White immediate enrollment rates. A final gap that affects the proportions of minorities in higher education is the gap between first-generation college students and students with parents who have earned a bachelor’s degree or higher. Minority students are disproportionately more likely to be first generation college students (Zalaquett, 1999) and the gap between first generation college students and their counterparts whose parents’ earned a bachelor’s degree has been relatively constant (NCES, 2002).

To the extent that Whites make up the largest college-going population, trends in Texas are similar to those at the national level. However in Texas, Hispanic enrollments increased each year from 1995-1999. While increases in the Hispanic population of college

students have outpaced other ethnic groups, White students still comprise about 71 percent of the enrollment at Texas public universities. For the same time period, Hispanics comprised about 31 percent of the population and Whites made up nearly 55 percent of the state (Texas Higher Education Coordinating Board [THECB], 2001). A marked difference between Texas and the nation is the rate at which Texans participate in college.

"At present, a large gap exists among racial/ethnic groups in both enrollment and graduation from the state's colleges and universities" (THECB, 2000, p.4). In 2000, only 5% of the Texas population was enrolled in higher education while the nation boasted a 5.4% participation rate. A seemingly small difference, the gap is equal to 80,000 students (THECB, 2000). This revelation prompted the Texas Higher Education Coordinating Board to draft *Closing the Gaps by 2015*-the higher education plan for Texas. Closing the Gaps is made up of goals and strategies designed to close the gaps in participation, success, excellence, and research (THECB, 2000). To achieve the goals set forth, Texas public universities will have to shoulder 30% of the projected student growth by 2015. In order to eliminate the gaps in participation public universities are expected to enroll 446,000 students by 2005, which is 30,000 students over 2000 enrollment figures, and nearly 500,000 students by 2015 (THECB, 2001). By 2015 whites will make up just over 45% of the population, Hispanics will make up 39 percent, and Blacks will make up 10.6 percent (THECB, 2001). Participation rates for all ethnic groups will have to increase in order to achieve these goals. The plan also includes strategies for achieving the goals. One of the critical strategies for meeting the participation goal is to make the Recommended High School Program (RHSP) the standard curriculum at Texas public high schools (THECB,

2000). The RHSP includes courses in advanced math and science, social studies, language arts, and requires students to study a language other than English (Texas Business Education Coalition [TBEC], 2003). Making this curriculum the default curriculum will greatly enhance students' efforts to gain admission to and succeed in college. If the plan proves successful the result will be greater levels of academic preparedness among the students who enter college and post-secondary enrollments that mirror the projected population of the state (THECB, 2000).

The gap in participation and graduation rates is partially attributable to the mindsets of educators. "Superintendents, principals, counselors, teachers…simply do not believe that children of color and children from low income homes can or will be academically successful at the same levels as white children and children from middle- and upper-income homes" (Skrla, 2001, p. 1). This mindset is substantiated by Ferguson's findings that teacher's low expectations based on standardized test performance adversely impact students' future performance (1998). These students are also more likely to attend high schools that, "offer less competitive instruction and college counseling" (Orfield, 1992, p. 343). To make matters worse, the effects of low-expectations and the resultant poor teaching are cumulative and significant over the course of a student's career (Haycock, 2001).

However, this biased mindset is not reserved for educators. Sadly, many policymakers hold the same beliefs (Jerald, 2001). Another factor effecting participation and graduation is a lack of information about college programs and financing (THECB,

2000). Finally, in its report, The Texas Commission on a Representative Student Body (1998) observes:

> A major barrier to full minority participation in the higher education process often arises after the student enrolls. African-American and Hispanic students are at considerably greater risk of dropping out or "stopping out" before completing a degree. Some will persevere over a number of years to receive a degree, but the greater number do not and never reap the cultural, economic, and social benefits conferred by the status of "college graduate."

High drop out, stop out, and low completion rates are all characteristic of first-generation college students.

The First-Generation College Student

Characteristics

The National Center for Education statistics defines first-generation college students as those whose parents have no education beyond high school (2002) and research indicates that "a significantly higher percentage of first-generation students came from minority backgrounds" (Zalaquett, 1999, p. 420). In 1992, only one-third of all high school graduates had at least one parent with a bachelor's or advanced degree (Horn and Nuñez, 2000). Parents' education is key; research shows that students whose parents did not attend college show markedly lower levels of educational expectations, parental guidance, access to college and preparatory coursework, immediate transition rates, academic persistence, as well as lower completion rates.

The effects of parents' educational status on their children's post-secondary achievement are evident as early as eighth grade. Students with at least one parent who

finished college are more likely to report higher educational expectations at this time and are more likely to take the steps necessary to enroll in college than their counterparts whose parents have no college education (Choy, 2002). Similarly, Berkner and Chavez report that among 1988 eighth graders, 91 percent of those whose parents held a bachelor's degree or higher expected to earn a bachelor's degree, compared to 55 percent of those whose parents had no postsecondary education (1998). College educated parents also tend to be more involved in guiding their students' curricular decisions. Students who scored high in mathematics proficiency in the eighth grade were more likely to report that their parents encouraged them to enroll in algebra and helped choose their high school program (Horn and Nuñez, 2000). Research indicates that students from lower socioeconomic status and first-generation backgrounds tend to be tracked into lower-level classes where they are less likely to be exposed to counseling that would assist them into entering higher level classes (Lee and Ekstrom, 1987; Oakes, 1990). Further compounding this situation, "a substantial proportion of students whose parents did not attend college attend a middle or junior high school that do not offer algebra" (Choy, 2002, p.15).

> One out of five high-ability eighth graders whose parents had not gone beyond high school reported that their school did not offer algebra. Only one out of 10 high-ability eighth graders whose parents were college graduates attended a school that did not offer algebra (Choy, 2002, p. 15).

First-generation college students are also at a disadvantage regarding access to postsecondary education and enrollment. Non first-generation college students,

> had a distinct advantage regarding postsecondary access. Within two years of finishing high school, 93 percent of [studied] high school graduates enrolled in some type of postsecondary education, most frequently a four-year college. In contrast, only 59 percent of those whose parents did not go beyond high school enrolled in postsecondary education (Choy, 2002, p. 13).

Additionally, 27 percent of the first-generation students in this study enrolled in a four-year college and another 27 percent of this group enrolled in a two-year college (Horn and Nuñez, 2000). The National Center for Education Statistics found that of the students who began their college education in 1995-96, first-generation students were less likely than their counterparts to enroll in four-year institutions. 30 percent of the first-generation students enrolled in a four-year institution, as compared to 70 percent of their non-first-generation peers (1998).

Immediacy of enrollment is also an important factor to consider when discussing college completion. The National Center for Education Statistics would agree: Between 1990 and 2000 high school, "completers whose parents had attained a bachelor's degree or higher were more likely than those with parents who had less education to enter college immediately after high school graduation" (2002, p.74). Students who begin college at age 20 or older also tend to take longer to graduate than those who attend college immediately following high school (McCormick and Horn, 1996). "The longer it takes students to earn a bachelor's degree, the more costly their education becomes-not only for themselves, but for their institutions and the public as well" (Choy, 2002, p. 27). Transferring from a community college to a university may also result in longer tenures in school (Choy, 2002).

While students may choose to attend a community college to save money or improve academic skills before transferring to a four-year institution, research studies suggest that beginning postsecondary education at a two-year institution is associated with leaving higher education without having completed a degree (46 percent versus 23 percent) (NCES, 1997). These numbers are especially telling when coupled with additional research

that indicates that students who first attend a community college are less likely to transfer to a four-year institution to complete a bachelor's degree (McCormick, 1997) and those who do earn a degree will earn 6.4 percent less than students who began at a four-year institution (Monk-Turner, 1994). McCormick and Horn found that students who enroll in and remain at a four year university are more likely to graduate in a timely manner. Completion rates for students who remain at one institution are considerably high- 51 percent within four years and 80 percent within 5 years in the case of one studied institution (1996).

Like aforementioned variables, persistence in college is linked to a student's parents' educational level. Of the students who enrolled in postsecondary education in 1995-96, those who were first generation students were less likely to be pursuing a bachelor's degree 3 years later (13 versus 33 percent) (NCES, 1998). High school curriculum also plays a role in persistence (Choy, 2002, p. 20). Warburton, Bugarin, and Nuñez found that, "87 percent of all students who took rigorous academic coursework in high school stayed on the persistence track, while only 62 percent of students who did not take such coursework did so" (2001, p. 34).

Finally, parents' education impacts aspirations toward advanced degrees. "First-generation college students were less likely than those with a parent who had earned at least a bachelor's degree to enroll in a graduate degree program (Choy, 2000). The consequences of being a first-generation college student are clear. Fortunately, steps can be taken to mitigate the negative impact that parents' education can have on students' academic success.

Mitigating First-Generation Effects

Since this group of students is likely to continue to grow in relation to the total undergraduate population (Terenzini, 1995), it is important to understand the steps that can be taken to overcome some of the pitfalls of being a first-generation college student. One critical variable regarding persistence once a student enrolls in college is preparation at the secondary level (Choy, 2002). "The types of academic courses students take in high school…have proven to be a crucial factor in keeping students on the path to college" (Choy, 2002, p. 12). Indeed, Adelman's research indicates that the strongest single predictor of the successful completion of an undergraduate program is academic rigor at the secondary level (1999). Secondary academic rigor, especially in math courses, affects students' chances of being accepted to college (Choy, 2002) and students who opt into more rigorous high school math courses are more likely to enroll in college than those who do not (Horn and Nuñez, 2000). Sadly, "just over one-fifth (22 percent) of 1992 high school graduates took high school level algebra in the eighth grade" (Horn and Nuñez, 2000, p. 15). Many colleges, "require (or strongly recommend) advanced mathematics courses for admission" (Choy, 2002, p. 15), where advanced math courses are defined as courses beyond Algebra II. While these findings are promising, it is important to remember that while rigorous high school prep substantially narrows the gap but it does not eliminate it (Warburton, Bugarin, and Nuñez, 2001; NCES, 2002). Fortunately for the first-generation college student, "first-generation status does not appear to affect occupation or income, at least in the first few years after graduating. That is, if high school graduates whose parents did not attend college overcome the barriers to enrollment and persistence

and graduate with a bachelor's degree, they fare as well as their peers whose parents attended college" (Choy, 2002, p. 31).

Economics and the Case for Diversity

The Texas Higher Education Coordinating Board estimates that by the year 2030, Hispanics will comprise 46% and African Americans will constitute 9% of Texas workers. With these projections in mind, the Coordinating Board emphasizes that greater numbers of minorities must participate in higher education in order for Texas to remain economically competitive (THECB, 1998). Economic changes have "dramatically increased the skills workers need to earn a middle-class living" (THECB, 1998, p. 117). The skills sought by many employers are skills that only degreed professionals possess. For that reason, over the past two decades in the United States the median earnings of adults with at least a bachelors degree have increased relative to their counterparts with only a high school diploma or GED. (NCES, 2002). For the individual Texan, a baccalaureate degree ensures an income almost four times higher than that of someone with a high school diploma (Murdock, 1998). Additionally, four years after graduating, interviews with 1992-93 college graduates revealed that the unemployment rate for this group was 2.9 percent when the national unemployment rate for adults 25 and older was 3.7 percent (McCormick, et al., 1999). The message? It pays to graduate from college. While the degree is conferred to the graduate, fiscal rewards are conferred to the public as well as to the graduate. A more educated workforce will improve Texas' tax base and its ability to compete for jobs that require skilled and knowledgeable workers (THECB, 1998). Unfortunately, college costs

are rising, and this inflation prices higher education out of the reach of many minorities. The Texas Commission for a Representative Student Body (TCRSB) (1998) found that:

> more than 46% of Texas households have incomes below $25,000, and more than 62% of African-American and Hispanic households fall in this category *(THECB, College Costs).* This could help explain why only 6% of the bachelor's degrees granted at Texas public universities in 1995 went to African-Americans and only 15% to Hispanics (Texas Higher Education Coalition, Back to Basics)...Lack of money is the main reason why minority students do not enter college, transfer from community and technical colleges, or stay long enough to receive a degree. Without additional financial support, many Texans will not acquire the education necessary to become fully productive citizens, and the state will not have the educated workforce it needs to remain competitive.

The traditional scheme for increasing diversity is race-based scholarships and financial aid packages; however in Texas, scholarship and admissions procedures based on race were outlawed with the *Hopwood v. Texas* decision (Browne, 2001; Thompson and Tobias, 2000), which effectively eliminated affirmative action in higher education. As a result, Texas was forced to adopt a class-rank policy for higher education admissions. Texas' Top Ten Plan, now state law, "requires Texas public universities to admit the top 10% of students graduating from any high school in Texas into the public university of their choice" (Thompson and Tobias, 2000, p. 1123). Browne (2001) asserts that "class-rank policies virtually guarantee a racially diverse student body." However, this may not be the case. While the results Texas' class-rank plan remain to be seen, preliminary evidence from Texas' flagship institutions Texas A&M University and The University of Texas indicate that the Hopwood decision coupled with the Top Ten Plan have stifled diversity at these two campuses (Thompson and Tobias, 2000).

While many accept the need for increased diversity, efforts to achieve this goal have often been met with mixed results. Altbach and Lomotey (1991) as well as Farrell and

Jones (1988) observed that diversity initiatives in the 1980's resulted in renewed racial tension. Despite the potential negative side effects of diversification efforts, there exist compelling reasons for striving toward a more diverse campus. In the latter portion of the 1980's and in the early 1990's states began to recognize that demographics were shifting and that these shifts would impact the ability of states to remain economically competitive (Matthews, 1996). Similarly, scholars at the national level observed that closing the achievement gaps of underrepresented groups is a national concern (Hurtado et al., 1999). A part of Texas' response to this national issue lies in the Texas Higher Education Coordinating Board's Closing the Gaps goal of increasing African American and Hispanic enrollments.

In addition to the societal and personal economic gains associated with diversifying higher education, students in a diversified environment also reap social benefits. Antonio (1998) found that socializing across race contributes to cultural awareness as well as leadership ability and that diversity is generally beneficial to psychosocial development (Antonio, 1998). In a related study, Chang (1996) found that such socialization coupled with discussions about racial/ethnic issues improves retention of minorities and non-minorities. Additionally, those students educated in a diverse environment tend to express higher levels of openness to diverse perspectives (Pascarella, et al., 1996).

Finally, research studies indicated that students educated in more diverse environments reaped greater academic benefits than did their counterparts who studied in more homogeneous settings. Hurtado (1997) found that students in less homogeneous environments demonstrated growth on problem solving skills, critical thinking skills as

well as the ability to work cooperatively with peers. Similarly, Astin (1993a, 1993b) found higher levels of academic development in terms of critical thinking skills, analytical skills, general and specific knowledge, and writing skills. In addition, students studying in a diverse environment expressed improved satisfaction with college.
Among African Americans, positive interracial contacts led to having an easier transition to college, which resulted in higher GPA's and less intent to drop out (Bennett, 1984).

While attempts to increase diversity are not always easily implemented, the benefits are clear. Improving the personal economic situation for underrepresented groups results in financial benefits for the state and the nation. A heightened sense of cultural awareness among the citizenry enhances society, while the academic and interpersonal improvements attributed to socializing across race and ethnicity achieves primary educational goals, which leads to more capable workers. These benefits unequivocally demonstrate the need to increase the diversity in higher education.

Accountability and High-Stakes Testing

During the 19th Century tests were used as a means of disenfranchisement and the dawn of the 20th century saw tests being used to determine who could enter the country. In more recent years they have been employed to screen armed forces applicants, to determine students in need of remedial education, and to assess student performance (Amrein and Berliner, 2003). Before 1980 less than a dozen states required standardized testing for students, but by 2000 nearly all states had adopted high-stakes tests (Hoffman et al., 2001). Such tests are so-called because they are used to, "determine whether students graduate or are promoted to the next grade, which teachers win bonuses, or what schools are taken over

by states or districts. Those kinds of consequences earn tests the 'high-stakes' label" (Viadero, 2003, p. 6). Tests of various types have become the centerpiece for accountability and standards-based reform (Hoffman et al., 2001) and in many ways Texas has led the charge in the accountability testing arena. Jerald (2001, p. 2) notes, "Texas has made one of the longest-running attempts to raise academic standards among the 50 states."

Testing in Texas

Texas accountability began with a focus on minimum basic skills in the 1980's with the Texas Assessment of Basic Skills (TABS) (Hoffman et al., 2001; Jerald, 2001) In 1985 the assessment was revamped into the Texas Education Assessment of Minimal Skills (TEAMS), and in 1990 the state introduced the Texas Assessment of Academic Skills (TAAS), a criterion-referenced exam based on the statewide curriculum (Jerald, 2001). The latest permutation of the Texas model is in the form of the Texas Assessment of Knowledge and Skills (TAKS).

The Texas model has evolved into one of the most highly touted state accountability systems in the country (Hoffman et al., 2001; Jerald, 2001). In addition to being an accountability innovator, Texas was also a forerunner in holding teachers and administrators responsible for the results of the exams as well as a leader in the transition from norm-referenced testing to criterion-referenced testing. Despite protests and lawsuits state policy makes have also withstood pressure to water down tests in order to boost achievement levels (Jerald, 2001).

As the Texas story demonstrates, the movement toward higher standards and greater accountability will not disappear (Kean, 1995). The nation as a whole is focused on

standards and assessments (Fuller and Johnson, Jr., 2001; Kean, 1995). At the national level there are many examples of individual schools that are highly successful with all students achieving academic results that do not conform to widely-believed stereotypes about impoverished or minority students (Ragland, et al., 1999; Skrla, 2001). As Skrla et al. point out (2001, p. 243):

> "Education issues have risen to the top of national and state political agendas (EIA, 1998). Furthermore, annual expenditures for public education consume a larger share of states' budgets than any other state function (nearly 40% in most cases). The political and economic importance of public education in the current economy has led to increased public demands for accountability. This accountability movement has spawned a variety of national and state policy responses, including establishment of standardized testing."

Despite the popularity of accountability and the political rhetoric that surrounds the issue, "there is growing evidence from several states (e.g. Connecticut, Kentucky, New York, North Carolina, and Texas, among others) that state policy initiatives that resulted in accountability systems for public schools have improved student performance for all students (as measured by state achievement tests, National Assessment of Educational Progress [NAEP], and Advanced Placement [AP] exams) (TEA 1996, Grissmer and Flanagan 1998, Grissmer et al. 2000, as cited in Skrla et al., 2001, p. 243). At the same time, there is also evidence of narrowing of the achievement gap between the performance of children of colour and low-income children and that of their White and more economically advantaged peers" (Skrla et al., 2001). "Accountability systems have the tactical potential to raise the baseline of acceptable academic achievement for all children, including children of colour, to levels at least the same as middle-class White children have experienced for some time" (Skrla et al., 2001, p. 247).

The groundwork for the Texas accountability system was laid with the passing of House Bill 72. This bill also mandates class size limits and funding equalization between poor and wealthy districts (Skrla et al., 2001): "Go back to 1984 when the Texas Legislature for the first time sought to emphasize student achievement as the basis for accountability. That year, House Bill 72 called for a system of accountability based primarily on student performance. Prior to that, accountability focused mostly on process, that is, districts were checked to see if their schools had been following rules, regulations, and sound educational practices" (TEA, 2003a). Today, students are tested on criterion-referenced tests and for comparison purposes scores are disaggregated by race and socioeconomic status so that all schools and districts are held accountable for student achievement of all tested groups (Skrla et al., 2001). Disaggregated data allows for comparisons of students regardless of moderating variables such as family income.

Improvement and Comparisons

Statewide, TAAS results since the full implementation of the accountability system in 1993 have shown improvements in scores for all students as well as minority groups (Fuller and Johnson, Jr., 2001). The proportion of students passing the exam rose from 55% in 1994 to 74% in 1997. 41% of Hispanics passed the test in 1994 and 62% passed in 1997. Black students' scores increased from 32 to 56 percent for the same period. The same trend was evident in 1998. The overall passing rate was 78%, with Hispanics passing at a rate of 68%, followed by Blacks at 63% (Fuller and Johnson, Jr., 2001; Jerald, 2001). In addition to group and subgroup improvement during the tenure of the TAAS exams, studies indicate that Texas has made progress when compared to the National Assessment of

Educational Progress (NAEP) (Fuller and Johnson, Jr., 2001; Jerald, 2001) and in many cases has made impressive gains relative to other states (Fuller and Johnson, Jr., 2001; Jerald, 2001).

Like pass rates, completion rates, Advanced Placement examination rates, and SAT examination rates, too, have been on the rise (Jerald, 2001). While national completion rates declined by 3 percent from 1993 to 1999, Texas completion rates actually rose by nearly 5 percentage points. The same trend is also evidenced in the completion rates for minority students (Jerald, 2001). By comparison, the percentage of Hispanic and Black juniors and seniors taking at least one Advanced Placement exam has risen dramatically since the year before the full introduction of the accountability system (1992-1993) to the year 2000. Black students taking an AP exam have increased at a rate four times greater than in other states. Hispanics are taking AP exams at double the rate as in other states. Unfortunately the number of minorities taking AP exams in Texas is low (Fuller and Johnson, Jr., 2001). During the same time period, SAT examinations taken by Texas high school seniors rose 30% while the number of seniors in Texas high schools only increased 3%. Notably, the increase in SAT examinations taken far exceeded the increase in nationwide test takers for all demographic groups (Fuller and Johnson, Jr., 2001). Fuller and Johnson, Jr. (2001, p. 278) conclude that:

> There have been positive changes in the achievement of Texas students as measured but the TAAS, NAEP, and some other indicators of academic success. The positive change has been particularly pronounced for students of color and students from low-income homes. The improvements in performance cannot be attributed simply to…easy tests or dropout rates…While acknowledging a multitude of important factors, it is important, however, to note that the state accountability played a central, catalytic role in driving the improvements that have led to the student achievement results.

The Future of Texas Accountability

Critics of TAAS charge that the tests did not adequately balance open-ended and multiple choice questions and that it relied too heavily on multiple choice items (Jerald, 2001). The exams were also criticized for the emphasis placed on less-challenging subject mater and the low-level evaluative benchmarks (Jerald, 2001). For example, the high school exit level information was based on material that was taught in the eighth grade (Jerald, 2001). With the transition from TAAS to TAKS, state policymakers hope to lie some of these criticisms to rest. The new assessment is a more challenging test for students than TAAS. This new program, legally mandated by Senate Bill 103 in 1999, expands upon the grades and subjects covered by the TAAS (TEA, 2003b). TAKS was administered for the first time during the 2002-2003 academic year. The exams measure proficiency on the state curriculum in reading at grades 3-9; writing in grades 4 and 7; English Language Arts in grades 10 and 11; math in grades 3-11; science in grades 5, 10, and 11; and social studies in grades 8, 10, and 11. Acceptable performance on the 11th grade exams is a requirement for graduation (TEA, 2003c).

Pre-collegiate Testing

High-stakes tests are not limited to use by the public schools. Colleges and universities use high-stakes tests for admissions and scholarship decisions and, in the case of Advanced Placement (AP) exams, how much course credit to award to students.

Preliminary Scholastic Aptitude Test

The Preliminary Scholastic Aptitude Test/National Merit Scholarship Qualifying Test (PSAT/NMSQT) is a program co-sponsored by the College Board and National Merit

Scholarship Corporation. For most students, the PSAT/NMSQT is their first exposure to pre-collegiate high-stakes testing. The assessment's three sections (Verbal, Math, and Writing Skills) are designed to test skills that students have acquired through years of study in a wide range of courses as well as through experiences outside the classroom (CEEB, 2004). The PSAT/NMSQT prepares students for the SAT test, one of the most common exams used for college admissions decisions. When taken as a junior, the assessment allows participants to enter the competition for National Merit Scholarship Corporation scholarship programs.

Advanced Placement

Administered by the College Board, Advanced Placement begin in the 1950's with funding by the Ford foundation. The program is based on the idea that many students are capable of performing college-level coursework and high schools have the desire to offer college-level courses (Camara and Millsap, 1998). While availability varies by campus, high school students who elect to participate in AP have the potential to choose from 31 college-level courses in 19 subject areas. Courses are offered in every state in the United States as well as 64 countries, at a total of more than 11,000 schools (Camara and Millsap, 1998). More than half of US high schools offered AP courses in 2000 (Lord, 2000) and Texas boasts AP availability in over 91% of its high schools (1445 out of 1580) (M. Fuller, personal communication, January 14, 2004).

To ensure academic rigor and program quality, committees of university faculty and AP teachers advise the College Board on AP course standards, descriptions, and examinations. While they do not dictate textbooks, lesson plans or teaching techniques, the College Board does supply course guidelines, sample exams and syllabi, and holds conferences and workshops to assist AP teachers (Willingham and Morris, 1986). Each May participating schools offer AP Exams to their students. The exams are scored on a scale of 1 to 5 and colleges and universities award credit or advanced course placement based on institutional policies. While most colleges and universities grant credit for exam scores of 3 or higher, some institutions only accept scores of 5 in some subject areas (Camara and Millsap, 1998)

Studies have shown that showing AP participation on a high school transcript strengthens the chances for college admission (Casserly, 1986; Willingham and Morris, 1986) and that AP students are better prepared for the rigors of higher education. Willingham and Morris (1986) found that AP students were more likely to major in areas with more rigorous grading standards and to double major. They also found that as compared to their peers with similar abilities, AP students were more likely to maintain a B average and to graduate with honors. Another study by Casserly (1986) concluded that AP participants who placed out of introductory courses did better in the first upper-level course than those students who took the introductory course. In a study conducted in 1993, Morgan and Crone suggest that for most levels of coursework, students with AP grades of at least 3 earned grades in the courses into which they were placed that were higher than their non-AP counterparts. These studies show that successful AP participation may be a springboard to success in higher education.

Some studies have also indicated a link between PSAT performance and AP performance (Camara and Millsap, 1998; CEEB, 1997; Morgan and Crone, 1993). This information is useful for school administrators considering introducing or expanding AP course offerings. The studies indicate that PSAT exam scores are strongly related to grades on all but four AP examinations. The exams without a relationship are studio are: design, studio are: drawing, German language and Spanish language. Furthermore, this relationship is, “Moderately strong and invariant across ethnic groups.” (Camara and Millsap, 1998, p. 19).

CHAPTER III

METHODOLOGY

Upon completion of the review of the literature, this study was designed to assess the association between PSAT scores and TAKS scores as well as to determine if this association was moderated by other variables such as gender, ethnicity, or socioeconomic status. This chapter outlines the tests analyzed in this study, the population, and statistical analysis procedures utilized. In addition, a description of population and their demographic characteristics is presented.

Population

The population for this study was the 3,243 sophomores at the 55 Texas high schools involved in the Texas AP/IB Center's PSAT Pilot Program. The AP/IB Center selected these schools to participate in the Pilot Program based on two criteria: 1) a high proportion of students from low socioeconomic status homes, and 2) the lack of an Advanced Placement program or low Advanced Placement Program participation rates. Appendix A contains a list of these schools, school districts, and PEIMS and College Board school codes.

The studied high schools were comprised mainly of minority students. The population had 2,626 Hispanic students (81%), 403 Caucasian students (12.4%), 153 African American students (4.7%), and 61 students identified as other ethnicity (1.9%).

Table 1 presents the ethnicity of the students in the study population.

Table 1. Ethnicity of Students in the Study Population

Ethnicity	n	%
Hispanic	2626	81.0
Caucasian	403	12.4
African American	153	4.7
Other ethnicity	61	1.9

In addition to being predominantly minority, the high schools in the study also had a high proportion of students whom TEA identified as economically disadvantaged. Table 2 presents the degree of disadvantage of the population's students.

Table 2. Economic Disadvantage of Students in the Study Population

Economic Disadvantage	n	%
Qualifies for free lunches	1404	43.2
Not disadvantaged	825	25.4
Other disadvantage	785	24.2
Qualifies for reduced price lunches	231	7.1

The final parameter used for analysis in the study was the gender of the students in the population. Females comprised 1,787 cases (55.1%), while males made up the remaining 1,455 cases (44.9%). Table 3 presents the gender of the population's students.

Table 3. Gender of Students in the Study Population

Gender	n	%
Female	1787	55.1
Male	1455	44.9

Protection of Human Subjects

Prior to receiving the data from the Texas Education Agency and the College Board, an Institutional Review Board (IRB) application was sent to the IRB Office at Texas A&M University and the study was approved. To guarantee anonymity for students, both the College Board and at the Texas Education Agency enforce policies that disallow the release of data that contains student-identifiable information or data from campuses or sub-categories that have fewer than five cases. Furthermore, the IRB application assured that the analysis would be carried out in such a way that no individual student could be identified.

Variables to Be Studied

The variables that were studied included: PSAT scores from exams administered in the fall of 2002, TAKS scores in Reading, Math, Science and History from exams administered in the Spring of 2003, as well as ethnicity, socioeconomic status, and gender of the test takers. PSAT scores were obtained from the College Entrance Examination Board and TAKS scores were supplied from Texas Education Agency's Public Education Management and Information System (PEIMS) database.

Procedures

The following procedures were used in order to conduct this study:

1. A review of relevant literature was conducted.
2. PSAT data were obtained from the College Entrance Examination Board by the Texas Education Agency.
3. The Texas Education Agency merged the PSAT data with its TAKS and demographic data, deleting records where fewer than 5 students from a campus participated and masking all student-identifiable data.
4. The combined data were provided to the researcher for analysis.

Instrumentation

The Texas Assessment of Knowledge and Skills (TAKS) has been used in Texas for

the past two years. It is a criterion-referenced exam used to measure the skill levels of students in reading, math, history, and science. Students' performance on the TAKS is used by the Texas Education Agency in the state's accountability system. Ratings of Exemplary, Recognized, Acceptable, and low-performing are assigned to every public school in the state based on the outcome of the assessment.

Evidence for the validity of the TAKS lies in the content being measures. he TAKS exams measure the state prescribed curriculum, the Texas Essential Knowledge and Skills (TEKS), which is required to be taught to all students; therefore, the tests are no more or less valid for any given sub-population. Stated differently, because the TAKS measures the required curriculum and is given under the same conditions to all students, the tests are equally valid for all students (TEA, et al., 2002).

Reliability is an indicator of consistency of the measurement. The TAKS developers based TAKS reliability on internal consistency measures, in particular on the Kuder-Richardson Formula 20 (KR-20). KR-20 measures for the TAKS are in the high .80 to low .90 range (TEA, et al., 2002).

The Preliminary Scholastic Aptitude Test (PSAT), co-sponsored by the College Board and the National Merit Scholarship Corporation, is often a student's first exposure to material similar to that found on the SAT. Typically taken during the sophomore or junior year in high school, the tests' three sections are designed to preliminarily assess a student's potential to perform college-level work.

Reliability figures for the PSAT are in the low to high .80 range. The test with the lowest reliability is the Writing Skills exam, with a coefficient of .82. The Mathematics

examination follows with a reliability coefficient of .87. PSAT Verbal reliability is highest with a coefficient of .88 (CEEB, 2003). These three coefficients reflect a high degree of consistency on the PSAT test.

Data Analysis

This section outlines the data analysis procedures employed to analyze the PSAT and TAKS scores from the 3,243 sophomores enrolled in the 55 high schools targeted by the Texas AP/IB Center.

The data sets yielded wholly quantitative data. This study was descriptive in nature, and for this reason descriptive statistics were used to analyze the data. The findings of this study have been graphically described using tables. Examination and exploration of the data followed the guidelines described in *Educational Research: An Introduction* (Gall, et al., 2003).

The data set was loaded into the Statistical Package for the Social Sciences (SPSS) for Windows version 11.5. Statistical calculations were then executed to analyze the variables in question. Calculations included measures of central tendency, variability, correlation, analysis of variance (ANOVA), and t-tests. The data were organized to present detailed information about the association between PSAT scores and TAKS scores, as well as demographic variables such as race, gender, and socio-economic status. These procedures are discussed in greater detail in Chapter IV.

The first research question in Chapter I was as follows: What was the association between PSAT scores (Verbal, Math, and Writing Skills) and TAKS scores (Reading, Math, Science and History)?

To answer this question, the researcher used SPSS to compute the Pearson correlation between the seven variables. The data from 3,242 cases were used in this calculation. Chapter IV describes this procedure in greater detail.

The second research question indicated in Chapter I was as follows: Are there significant differences in PSAT scores and TAKS scores by ethnicity, gender, and economic disadvantage?

To answer this question, the researcher performed three separate analyses. Analysis of variance was performed on 3,182 cases to determine the association between PSAT scores, TAKS scores, and ethnicity. Given the small number (61) of students identified as other ethnicity and that Hispanics, Caucasians, and African Americans comprise the primary minority groups in Texas, the researcher performed statistical analyses only for the three representative groups in the population. The following chapter provides more detail on this analysis.

The researcher then performed an independent samples t-test to determine the relationship between PSAT scores, TAKS scores, and gender as well as socioeconomic status. This computation utilized 3,242 cases in the data set. Finally, to analyze the association between PSAT scores, TAKS scores, and socioeconomic status, the researcher performed an independent samples t-test on 2,417 of the available cases. These procedures are discussed in greater detail in the following chapter.

For the purposes of this study, the alpha level $p<.05$ was considered acceptable to demonstrate statistically significant differences. Higher levels of significance were indicated when appropriate.

In summary, the population for the study was the 3,243 sophomores at the 55 Texas high school involved in the Texas AP/IB Center's PSAT Pilot Program. The intent of the research was to determine the association between PSAT, TAKS and demographic data in order to inform decision making by campus and district administrators as well as policy holders. This was a descriptive study that used descriptive statistics to analyze the obtained data sets. Gall et al. (2003) provided the guidelines to analyze and explain the data.

CHAPTER IV

PRESENTATION AND ANALYSIS OF DATA

Introduction

This study examined the relationship between PSAT scores and TAKS scores in selected Texas high schools. Correlations, Analysis of Variance, and Independent Samples t-Tests were used to analyze the data. The data set consisted of three PSAT scores (Verbal, Math, and Writing Skills), four TAKS scores (Reading, Math, Science, and History), and three demographic variables (ethnicity, gender, and economic disadvantage).

Chapter IV consists of an analysis of the data obtained from the College Entrance Examination Board and the Texas Education Agency. The procedures for data analysis and a summary of the findings are presented in this chapter.

Research Question 1

What was the association between PSAT scores (Verbal, Math, and Writing Skills) and TAKS scores (Reading, Math, Science and History)?

Calculation Procedures

A correlational analysis was performed using the College Entrance Examination Board variables: PSAT Verbal, PSAT Math, PSAT Writing Skills and Texas Education Agency PEIMS variables: TAKS Reading, TAKS Math, TAKS Science, and TAKS History. Pearson product moment correlations offer insights into the strength and direction

of the relationship between two variables. The strength of the relationship is offered when the correlation coefficient is used in the computation of a coefficient of determination, a value that measures the amount of variance explained or shared by two variables. Data for this calculation was taken from 3,242 of the available cases. This correlational analysis addresses the first research question of the study.

Findings and Discussion

The researcher examined the correlation matrix for the seven examination variables. All of the PSAT examination scores were found to be significantly correlated with the TAKS examination scores. The PSAT Verbal and TAKS Reading examination scores exhibited a moderate relationship $r = .432$ ($p < .001$). This is interpreted as an 18.7% shared variance between the two variables, which is the lowest shared variance for PSAT Verbal associations. PSAT Verbal scores were more strongly correlated with TAKS Math scores $r = .511$ ($p < .001$). This relationship is moderate but slightly stronger than the PSAT Verbal-TAKS Reading relationship. 26.1% of the variance between the two variables is shared. PSAT Verbal examination scores also exhibited a moderate relationship with TAKS Science scores $r = .445$ ($p < .001$), accounting for 19.8% of the variance. Finally, PSAT Verbal scores and TAKS History scores correlated $r = .520$ ($p < .001$) accounting for 27.0% of the variance. To varying degrees, as PSAT Verbal scores increased, so too did TAKS Reading, Math, Science, and History scores.

The PSAT Math and TAKS Reading examination scores covaried moderately $r = .405$ ($p < .001$), a 16.4% shared variance between the two variables. PSAT Math scores were strongly correlated with TAKS Math scores $r = .637$ ($p < .001$). 40.6% of the variance

is shared between the two math scores. PSAT Math examination scores also exhibited a moderate relationship with TAKS Science scores $r = .453$ ($p < .001$), accounting for 20.5% of the variance. Finally, PSAT Math scores and TAKS History scores correlated $r = .482$ ($p < .001$) accounting for 23.3% of the variance. The math score association is the strongest of all of the correlations computed for the two examinations.

The PSAT Writing Skills and TAKS Reading examination scores exhibited a moderate relationship $r = .409$ ($p < .001$), a 16.7% shared variance between the two variables. This is the lowest shared variance for PSAT Writing Skills associations. PSAT Writing Skills scores were more strongly correlated with TAKS Math scores $r = .504$ ($p < .001$). This relationship is also moderate but slightly stronger than the PSAT Writing Skills-TAKS Reading relationship. 26.4% of the variance between the two variables is shared. PSAT Writing Skills examination scores also exhibited a moderate relationship with TAKS Science scores $r = .410$ ($p < .001$), accounting for 16.8% of the variance. Finally, PSAT Writing Skills scores and TAKS History scores correlated $r = .490$ ($p < .001$). This is interpreted as a for 24.0% shared variance. Table 4 presents the Pearson r values for the examination scores.

Table 4. Pearson r Values for TAKS and PSAT Scores

	PSAT Verbal	PSAT Math	PSAT Writing Skills
TAKS Reading	.432	.405	.409
TAKS Math	.511	.637	.504
TAKS Science	.445	.453	.410
TAKS History	.520	.482	.490

Note. All correlations are significant at the $p < .001$ level.

While the association among TAKS scores and PSAT scores ranged from moderate to strong, the bulk of the assessments showed a moderate degree of covariance.

Research Question 2

Are there significant differences in PSAT scores and TAKS scores by ethnicity, gender, and economic disadvantage?

Calculation Procedures

Several inferential statistical tests were required to analyze the data for the second research question. Analysis of Variance (ANOVA) was used to analyze the College Board PSAT and Texas Education Agency PEIMS TAKS scores by ethnicity. Data from 3,182 students were used in this calculation. Tamhane's T2 post-hoc analysis was used to further analyze the means when the ANOVA yielded statistically significant findings. The

differences in test scores by gender and economic disadvantage were analyzed using two separate Independent Samples t-tests. Data on 3,242 students were available for gender and economic disadvantage calculations. The researcher collapsed the disadvantaged students into one category rather than analyzing the three levels separately. Research on differences in test performance that uses income as a factor typically uses a dichotomous variable to analyze the association between test scores and family income. An alpha level of $p < .05$ was considered statistically significant for all of the statistical procedures.

Ethnicity

A one-way ANOVA was used to determine the extent to which there are differences in PSAT and TAKS scores by ethnicity. The study population only included 61 students identified as "other." This category includes Asian American, American Indian, and students of unknown ethnicity. Due to the population's low numbers of students in these minority groups and due to the current and projected ethnic makeup of Texas, the researcher limited the analysis to Caucasian, Hispanic, and African American students. See Table 5 for the mean PSAT and TAKS scores and standard deviations for these three groups. Appendix B presents similar data that includes the students from the omitted "other" classification.

Table 5. Means and Standard Deviations for PSAT and TAKS Scores by Ethnicity

	Caucasian (n=403)		Hispanic (n=2626)		African American (n=153)	
Exam	*M*	*SD*	*M*	*SD*	*M*	*SD*
PSAT Verbal	45.67	9.72	37.49	8.27	37.31	8.58
PSAT Math	46.82	10.28	39.70	9.02	38.86	7.70
PSAT Writing Skills	48.83	9.59	43.03	7.05	42.36	6.92
TAKS Reading	2186.46	214.11	2120.06	209.61	2127.38	166.02
TAKS Math	2165.86	217.93	2090.35	196.53	2053.35	173.85
TAKS Science	2107.23	249.00	1980.61	263.39	1975.86	244.50
TAKS History	2253.48	274.11	2144.75	238.73	2135.27	214.74

As Table 6 illustrates, the Analysis of Variance (ANOVA) results for all seven examinations yielded a statistically significant difference in the scores between the three ethnic groups. Levene's test of homogeneity of variances indicated that the seven examinations did not have homogeneous variance, therefore the researcher used Tamhane's T2 post-hoc test to further analyze the difference between the subgroup's means. Appendix C lists Levene statistics and their significance values.

Table 6. Means, Standard Deviations, and F Values for PSAT and TAKS Scores Factored by Ethnicity

Exam	*M*	*SD*	*F*
PSAT Verbal	38.52	8.91	163.98*
PSAT Math	40.56	9.43	109.17*
PSAT Writing Skill	43.73	7.67	109.64*
TAKS Reading	2128.82	209.40	17.75*
TAKS Math	2098.13	200.12	29.42*
TAKS Science	1996.41	264.17	41.66*
TAKS History	2158.07	245.06	35.86*

* Value is significant at $p < .001$.

Hispanic and African American students scored about the same on the PSAT Verbal examination, as their mean scores are separated by only .18 points. This difference is not statistically significant. On the other hand, Caucasian students outscored Hispanic students by 8.18 points and African American Students by 8.36 points ($p < .0001$). Table 7 presents this information.

Table 7. Mean Differences by Ethnic Group for PSAT Verbal Scores

		Mean Difference	p
Caucasian			
	Hispanic	8.18	< .001*
	African American	8.36	< .001*
Hispanic			
	Caucasian	-8.18	< .001*
	African American	.18	.99
African American			
	Caucasian	-8.36	< .001*
	Hispanic	-.18	.99

* Mean difference is significant

Table 8 displays the mean differences by ethnic group for PSAT Math scores. Again, Caucasian students outscored Hispanic and African American students. In this instance, Caucasian students fared better than Hispanic students by 7.12 points and better than African American students by 7.97 points ($p < .001$). Only .85 points separated the scores between Hispanic and African American students and this difference is not statistically significant.

Table 8. Mean Differences by Ethnic Group for PSAT Math Scores

		Mean Difference	p
Caucasian			
	Hispanic	7.12	< .001*
	African American	7.97	< .001*
Hispanic			
	Caucasian	-7.12	< .001*
	African American	.85	.99
African American			
	Caucasian	-7.97	< .001*
	Hispanic	-.85	.99

* Mean difference is significant

PSAT Writing Skills scores followed a pattern similar to the scores for PSAT Verbal and PSAT Math. Average scores for Caucasians students were 5.80 points higher than average Hispanic students' scores and 6.47 points higher than average African American students' scores ($p < .001$). Again, very few points separated Hispanic and African American students' average scores. The difference on this exam was .67 points. See Table 9 for presentation of this data.

Table 9. Mean Differences by Ethnic Group for PSAT Writing Skills Scores

		Mean Difference	p
Caucasian			
	Hispanic	5.80	< .001*
	African American	6.47	< .001*
Hispanic			
	Caucasian	-5.80	< .001*
	African American	.67	.57
African American			
	Caucasian	-6.47	< .001*
	Hispanic	-.67	.57

* Mean difference is significant

Table 10 presents TAKS Reading scores for each of the three ethnic groups in the study. On average, Caucasian students outperformed their Hispanic counterparts by 66.40 points on the TAKS Reading assessment ($p < .001$). African American students' average scores trailed their Caucasian counterparts' average scores by 59.08 points ($p < .001$).

Table 10. Mean Differences by Ethnic Group for TAKS Reading Scores

		Mean Difference	p
Caucasian			
	Hispanic	66.40	< .001*
	African American	59.08	< .001*
Hispanic			
	Caucasian	-66.40	< .001*
	African American	-7.32	.93
African American			
	Caucasian	-59.08	< .001*
	Hispanic	7.32	.93

* Mean difference is significant

TAKS Math assessment scores followed a slightly different pattern from either the PSAT scores or the other TAKS assessment scores. The mean difference between all three ethnic groups was statistically significant. Again, Caucasian students' average scores were highest, outscoring Hispanic students by 75.52 points and African American students by 112.52 points ($p < .001$). However, Hispanics outscored African American students by

37.00 points. This difference is statistically significant ($p < .05$). Table 11 presents this data.

Table 11. Mean Differences by Ethnic Group for TAKS Math Scores

		Mean Difference	p
Caucasian			
	Hispanic	75.52	< .001*
	African American	112.52	< .001*
Hispanic			
	Caucasian	-75.52	< .001*
	African American	37.00	.035*
African American			
	Caucasian	-112.52	< .001*
	Hispanic	-37.00	.035*

* Mean difference is significant

Table 12 shows the mean difference by ethnic group for TAKS Science scores. Caucasians average scores were highest for this assessment, outpacing Hispanic students' mean scores by 126.62 points and African American students' scores by 131.37 points ($p <$

.001). Only 4.75 points separated the mean scores for the two minority groups and this difference is statistically insignificant.

Table 12. Mean Differences by Ethnic Group for TAKS Science Scores

		Mean Difference	p
Caucasian			
	Hispanic	126.62	< .001*
	African American	131.37	< .001*
Hispanic			
	Caucasian	-126.62	< .001*
	African American	4.75	.994
African American			
	Caucasian	-131.37	< .001*
	Hispanic	-4.75	.994

* Mean difference is significant

Mean differences in TAKS History scores by ethnic group are presented in Table 13. Again, Caucasian students scores were highest. 108.73 points separated the means for Caucasian and Hispanic students ($p < .001$). African American students' mean scores trailed Caucasian student scores by 118.21 points ($p < .001$). Only 9.48 points separated

Hispanic and African American students' scores and this difference is not significant at the .05 alpha level.

Table 13. Mean Differences by Ethnic Group for TAKS History Scores

		Mean Difference	p
Caucasian			
	Hispanic	108.73	< .001*
	African American	118.21	< .001*
Hispanic			
	Caucasian	-108.73	< .001*
	African American	9.48	.935
African American			
	Caucasian	-118.21	< .001*
	Hispanic	-9.48	.935

* Mean difference is significant

In all cases, Caucasian students outscored their Hispanic and African American counterparts, and only in the case of TAKS Math where Hispanic student scores outpace African American student scores were there statistically significant differences between the two minority groups.

Gender

Table 14 presents the means and standard deviations for all seven PSAT and TAKS tests as factored by gender. Independent samples t-tests were performed on the PSAT and TAKS test scores to determine if the differences were statistically significant.

Table 14. Means and Standard Deviations for PSAT and TAKS Scores by Gender

	Male (n = 1455)		Female (n = 1787)	
Exam	*M*	*SD*	*M*	*SD*
PSAT Verbal	38.52	9.35	38.71	8.66
PSAT Math	41.84	10.19	39.73	8.79
PSAT Writing Skills	43.22	8.08	44.26	7.34
TAKS Reading	2109.12	218.58	2147.08	201.02
TAKS Math	2110.48	220.15	2091.26	183.08
TAKS Science	2008.85	289.25	1990.42	242.10
TAKS History	2175.38	264.41	2148.72	227.19

While the independent samples t-tests for exam score and gender yielded five statistically significant results ($p < .05$), the differences in means was relatively small. Table 15 presents the t values for the seven statistical tests. The largest difference between

males and females was on the TAKS Reading assessment, where females outscored males by 37.96 points. Males fared better than females on the TAKS History test with mean scores that were 26.66 points higher than their female counterparts. Average TAKS Math scores for males were 19.22 points higher than females. Males scored higher than females on the PSAT Math by 2.11 points on average. Finally, females outscored males on the PSAT Writing Skills test with a mean score difference of 1.04 points.

Table 15. Independent Samples t-Test for Gender

Exam	df	t	p (2-tailed)
PSAT Verbal	30001.82	-0.592	.554
PSAT Math	2886.83	6.229	< .001*
PSAT Writing Skills	2972.71	-3.818	< .001*
TAKS Reading	2991.28	-5.098	< .001*
TAKS Math	2823.61	2.664	.008*
TAKS Science	2834.89	1.939	.053
TAKS History	2880.17	3.039	.002*

* t value is significant at $p < .05$.

While the differences in scores between males and females on five of the exams are statistically significant, the pattern of the scores and mean differences offer little practical significance.

Economic Disadvantage

Table 16 presents the mean PSAT and TAKS scores and standard deviations for those students who are not economically disadvantaged and those who are economically disadvantaged. Note that in all cases, the average scores of students who were not economically disadvantaged were higher than the mean scores of the economically disadvantaged students.

Table 16. Means and Standard Deviations for PSAT and TAKS Scores by Economic Disadvantage

	Not Disadvantaged (n = 825)		Economically Disadvantaged (n = 2417)	
Exam	*M*	*SD*	*M*	*SD*
PSAT Verbal	42.93	9.41	37.15	8.33
PSAT Math	44.06	10.06	39.52	9.02
PSAT Writing Skills	46.76	8.66	42.78	7.06
TAKS Reading	2174.63	207.15	2114.71	208.66
TAKS Math	2139.88	201.90	2086.19	198.87

Table 16 (continued)

	Not Disadvantaged (n = 825)		Economically Disadvantaged (n = 2417)	
Exam	*M*	*SD*	*M*	*SD*
TAKS Science	2064.76	252.50	1975.74	265.20
TAKS History	2220.28	252.63	2140.31	238.91

The data in Table 17 indicate that all of the mean differences are statistically significant ($p < .001$). PSAT Verbal scores for students who were not economically disadvantaged were 5.78 points higher than their economically disadvantaged counterparts. PSAT Math and PSAT Writing Skills followed a similar pattern with non-economically disadvantaged students outscoring their economically disadvantaged classmates by 4.54 and 3.98 points, respectively. 59.92 points separated the scores of the non-disadvantaged group from the disadvantaged group on the TAKS Reading assessment. TAKS Math scores for the two groups were marginally closer with 53.69 points separating the two socioeconomic groups. The greatest disparity in scores was for the TAKS Science assessment. Non-economically disadvantaged students scored 89.02 points higher than their economically disadvantaged peers. Finally, the less fortunate students' scores on the TAKS History assessment were 79.97 points lower than their counterparts from homes with greater incomes.

Table 17. Independent Samples t-Test for Economic Disadvantage

Exam	df	t	p (2-tailed)
PSAT Verbal	1291.38	15.659	< .001*
PSAT Math	1304.86	11.485	< .001*
PSAT Writing Skill	1218.73	11.904	< .001*
TAKS Reading	3240.00	7.135	< .001*
TAKS Math	3240.00	6.677	< .001*
TAKS Science	3240.00	8.179	< .001*
TAKS History	3240.00	8.426	< .001*

* t value is significant at $p < .05$.

Economically disadvantaged students performed more poorly than their more fortunate counterparts on each of the seven exams under consideration.

Summary of the Findings

1. What was the association between PSAT scores (Verbal, Math, and Writing Skills) and TAKS scores (Reading, Math, Science and History)?

All of the PSAT and TAKS tests were found to have statistically significant correlations. To varying degrees, as PSAT scores increased, so did TAKS scores. The

association was moderate, with Pearson r values ranging from r = .405 (PSAT Math and TAKS Reading) to r = .637 (PSAT Math and TAKS Math). Surprisingly, the correlations for examinations with related content were not stronger. Examinations involving reading and writing skills would be expected to have strong correlations. PSAT Verbal and TAKS Reading as well as PSAT Writing and TAKS Reading examinations were among the weakest correlations found (r = .432 and r = .409, respectively). Similarly, PSAT Verbal scores were only moderately associated with TAKS History scores (r = .520) and PSAT Math scores were only moderately associated with TAKS science scores (r = .453).

2. Are there significant differences in PSAT scores and TAKS scores by ethnicity, gender, and economic disadvantage?

The study findings indicate that there are statistically significant differences by ethnicity, gender, and economic disadvantage for PSAT scores and TAKS scores. Differences by ethnicity were found on each of the seven examinations. In all cases, Caucasian students outperformed Hispanic and African American students. With the exception of the TAKS Math assessment, Hispanic and African American students' mean scores were statistically indistinguishable. Mean score differences were found by gender, but the differences were slight and likely have little practical significance. The mean score difference ranged from 37.96 points on the TAKS Reading test to a mere 1.04 points on the PSAT writing assessment. Females outscored males on only the TAKS Reading and PSAT writing tests. Finally, economic disadvantage was found to negatively impact mean scores on each of the seven exam scores examined in the study.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

The previous chapters included the introductory statement of the problem, the purpose of the study, the literature review, the methodology and procedures used in the study as well as the presentation of the data in order to answer each research question. This chapter is a summary of the results, conclusions drawn from the results, and a discussion of the implications of the results and conclusions. Recommendations for policy as well as recommendations for further research are also included in this chapter.

Summary

Summary of the Purpose

The purpose of this research study was to determine the relationships among PSAT scores and TAKS scores in selected Texas high schools in order to inform state policy makers, school district administrators and teachers as they strive to implement policies to improve student achievement. A secondary purpose of this study was to aid in pre-K-16 curriculum planning.

The study was guided by the following research questions:

1. What was the association between PSAT scores (Verbal, Math, and Writing Skills) and TAKS scores (Reading, Math, Science and History)?
2. Are there significant differences in PSAT scores and TAKS scores by ethnicity, gender, and economic disadvantage?

Summary of the Methodology

The population for this study was the 3,243 sophomores at the 55 Texas high schools involved in the Texas AP/IB Center's PSAT Pilot Program. The schools participating in this program were selected based on the high proportion of students from low-income homes and the lack of an AP program or low AP program participation. Students at participating high schools were predominantly minority and from homes identified by the Texas Education Agency as low socioeconomic status. This group of students was only 12.4% Caucasian and 25.4% not economically disadvantaged.

Following a review of the relevant literature, the researcher obtained a combined data set from the Texas Education Agency. Included in the data set were PSAT data from the College Entrance Examination Board, TAKS data from the Texas Education Agency's Public Education Information Management System, as well as demographic variables. To protect the anonymity of public school students, The Texas Education Agency deleted campus records with fewer than five students and masked all student-identifiable data.

The TAKS assessment and the PSAT were used as instruments for this study. The Texas Assessment of Knowledge and Skills (TAKS) has been used in Texas since the 2002-2003 academic year. This criterion-referenced exam measures the skills of students in reading, math, history, and science. TEA uses TAKS results as a key component in the accountability rating of public schools in the state. The scores are also used to determine if students will advance to later grades and graduate from high school. The College Entrance Examination Board's Preliminary Scholastic Aptitude Test (PSAT) oftentimes is a high school student's first expose to material similar to that seen on the Scholastic Aptitude Test

(SAT). Typically taken during the sophomore or junior year, the test is designed to preliminarily assess a student's ability to perform college-level work. Both instruments have been proven to be reliable and valid for the domains they assess.

Summary of the Analysis of Data

The data set was loaded into the Statistical Package for the Social Sciences (SPSS) for Windows version 11.5. Statistical calculations were then executed to analyze the variables in question. Calculations included measures of central tendency, variability, correlation, analysis of variance (ANOVA), and t-tests.

The first research question in Chapter I was as follows: What was the association between PSAT scores (Verbal, Math, and Writing Skills) and TAKS scores (Reading, Math, Science and History)?

To answer this question, the researcher used SPSS to compute the Pearson correlation between the seven variables. The data from 3,242 cases were used in this calculation.

The second research question indicated in Chapter I was as follows: Are there significant differences in PSAT scores and TAKS scores by ethnicity, gender, and economic disadvantage?

To answer this question, the researcher performed three separate analyses. Analysis of variance was performed on 3,182 cases to determine the association between PSAT scores, TAKS scores, and ethnicity. Given the small number (61) of students identified as other ethnicity and that Hispanics, Caucasians, and African Americans comprise the

primary minority groups in Texas, the researcher performed statistical analyses only for the three representative groups in the population.

The researcher then performed an independent samples t-test to determine the relationship between PSAT scores, TAKS scores, and gender as well as socioeconomic status. This computation utilized 3,242 cases in the data set. Finally, to analyze the association between PSAT scores, TAKS scores, and socioeconomic status, the researcher performed an independent samples t-test on 2,417 of the available cases. In all cases, an alpha level $p<.05$ was considered acceptable to demonstrate statistically significant differences.

Summary of Findings

All of the PSAT and TAKS tests were found to have statistically significant correlations. To varying degrees, as PSAT scores increased, so did TAKS scores. The study findings also indicate that there are statistically significant differences by ethnicity, gender, and economic disadvantage for PSAT scores and TAKS scores. Differences by ethnicity and economic disadvantage were stronger than differences by gender.

Conclusions

Several conclusions can be drawn from this study:

1. The degree of association between PSAT score and TAKS scores was moderate. See Table 4 for the Pearson r values for the PSAT/TAKS matrix. Given that PSAT scores are associated with potential AP performance (Camara and Millsap, 1998; CEEB, 1997; Morgan and Crone, 1993), this level of association

may have implications for determining if students are possibly capable of excelling in an Advanced Placement course. Based on Lee and Ekstrom (1987) as well as Oakes (1990), such information may be useful for identifying minority students who were otherwise deemed inadequately academically prepared for the rigors of post-secondary study.

2. Caucasian students consistently outperformed their minority counterparts on all examinations. Tables 5 shows the means and standard deviations for this group, while Table 6 presents ANOVA results. In order to achieve the goals of the Texas Higher Education Coordinating Board's plan for higher education, Texas will need to enroll an additional 54,000 students by 2015, a time when minorities are projected to comprise 55% of the population (THECB, 2001). While over time these differences in test performance by ethnicity have been reduced, educators and policy makers must continue their efforts to raise minority students' test scores to levels achieved by their white counterparts if the state is going to remain economically competitive.
3. Economically disadvantaged students achieved lower scores than their more affluent counterparts on all tests. Tables 16 and 17 present this data. Little political attention is paid to students from poor families, but Zalaquett (1999) shows that these students are oftentimes from minority and/or families where neither parent has attended college. The gap in performance between these students and their more affluent counterparts must be addressed if greater numbers of students are to go attend college.

4. Only five of the seven exams showed significant differences by gender. Descriptive and inferential statistics for test scores by gender are in Tables 14 and 15. While females outperformed males on most of the tests, the results are not conclusive.

Recommendations

This study was undertaken to assess the relationships among PSAT and TAKS examination scores. Assessing these relationships is important for ultimately ensuring the continued education of Texas' growing student population. The results of this study have led to several recommendations.

Recommendations for Policy

1. PSAT examinations should be offered to all sophomores. Lee and Ekstrom (1987) as well as Oakes (1990) showed minority and low-income students to be disparately provided access to guidance about college. In order for Texas' economy to flourish and for future generations to have middle-class incomes, this trend must stop. Given Texas' demographic makeup and its projected makeup, greater numbers of minority students and students from low-income homes must enter and graduate from institutions of higher education. PSAT exams would provide an early indicator of post-secondary as well as Advance Placement potential and by extension, a brighter future for students who may otherwise not have had access to college.
2. AP participation should be expanded in Texas High Schools. Fuller and Johnson, Jr. (2001) found that the numbers of minorities taking AP exams is low. Improved

course offerings would provide students the opportunity to be exposed to college-level work before leaving high school and would increase the likelihood that student will succeed in college (Wilson, 2004).

3. The plight of economically disadvantaged students should be included in policy discussions. Wilson (2004) demonstrates that there exists a distinct gap in test performance between economically disadvantaged students and their more affluent counterparts. Addressing economic disadvantage as it relates to test performance will invariably help further close the achievement gap among ethnic groups, as economically disadvantaged students are overwhelmingly minority students.

Recommendations for Further Study

1. This research was conducted using a small number of Texas public high schools. A similar study could be conducted using a greater number of campuses with a larger degree of diversity. Such a study would be more representative of Texas high schools and would provide generalizability to the state as a whole.
2. Future research could be conducted in three years for comparative purposes. The TAKS is a new assessment and history has shown that in time test scores improve and the achievement gap narrows. A future study would determine if the relationships among the variables are stable through time.
3. End-of-course grades for those students who are enrolled in pre-AP courses could be included in a similar study. The end-of-course grades could be compared to PSAT and TAKS achievement.

4. This study has demonstrated the level of association between PSAT and TAKS scores, while earlier research has established the degree of association between PSAT scores and AP scores. A future study could determine if TAKS performance is associated with AP achievement.
5. The data in this study could be analyzed to ascertain if differences in the strength of the relationship or in test performance exist by school district or campus. The quantitative analysis could be followed by a qualitative study to determine the causes underlying the differences.
6. A similar study could be conducted using parents' educational level as a variable to determine how this factor influences test performance.

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APPENDIX A

SCHOOLS AND SCHOOL DISTRICTS INVOLVED IN THE TEXAS AP/IB CENTER PRE-SAT PILOT PROJECT

High School Name	School District	PEIMS School Code	College Board School Code
Anthony High School	Anthony ISD	071906001	440218
Canutillo High School	Canutillo ISD	071907001	441113
Chilton High School	Chilton ISD	073901001	441270
Chireno High School	Chireno ISD	174901001	441285
Como-Pickton School	Como-Pickton Consolidated ISD	112908001	441450
David Crockett High School	Crockett ISD	113901002	440298
Dawson High School	Dawson ISD	175904001	441855
Del Valle High School	Del Valle ISD	227910001	442214
Dr. Leo Cigarroa High School	Laredo ISD	240901003	444037

High School Name	School District	PEIMS School Code	College Board School Code
East Central High School	East Central ISD	15911001	446135
Edcouch Elsa High School	Edcouch Elsa ISD	108903001	442125
Edinburg North High School	Edinburg Consolidated ISD	108904003	442148
Elysian Fields High School	Elysian Fields ISD	102906001	442265
Estacado High School	Lubbock ISD	152901005	444347
G. W. Brackenridge High School	San Antonio ISD	15907001	446145
Goodrich High School	Goodrich ISD	187903001	442885
Harlandale Senior High School	Harlandale ISD	015904001	446150
Hidalgo High School	Hidalgo ISD	108905001	443260
Highlands High School	San Antonio ISD	015907005	446151
J. W. Nixon High School	Laredo ISD	240901002	444043
James Pace High School	Brownsville ISD	031901003	440912

High School Name	School District	PEIMS School Code	College Board School Code
John F. Kennedy High School	Edgewood ISD	015905002	446157
Judson Sr. High School Gray Campus	Judson ISD	15916002	441477
L. W. Fox Academic And Technology High School	San Antonio ISD	15907004	446240
La Feria High School	La Feria ISD	31905001	443945
Lopez High School	Brownsville ISD	31901007	440921
Luther Burbank High School	San Antonio ISD	015907002	446165
Lyford High School	Lyford Consolidated ISD	245902001	444400
Martin High School	Laredo ISD	240901001	444045
Mckinney High School	Mckinney ISD	043907002	444630
Mckinney North High School	Mckinney ISD	043907004	444632
Medina High School	Medina ISD	010901001	444650
Pharr-San Juan-Alamo North High School	Pharr-San Juan-Alamo ISD	108909001	446313

High School Name	School District	PEIMS School Code	College Board School Code
Port Isabel High School	Point Isabel ISD	031909001	445625
Porter High School	Brownsville ISD	031901002	440911
Progreso High School	Progreso ISD	108910001	445713
Rankin High School	Rankin ISD	231902001	445795
Raymondville High School	Raymondville ISD	245903001	445800
Rio Hondo High School	Rio Hondo ISD	031911001	445875
Roma High School	Roma ISD	214903001	445965
Sam Houston High School	La Feria ISD	031905101	446235
San Benito High School	San Benito Consolidated ISD	031912001	446290
Santa Maria Hgh School	Santa Maria ISD	031913001	446343
Sidney Lanier High School	San Antonio ISD	015907008	446245
Simon Riveria High School	Brownsville ISD	031901004	440914

High School Name	School District	PEIMS School Code	College Board School Code
Southside High School	Southside ISD	015917001	446250
Southwest High School	Fort Worth ISD	220905014	440265
Sulphur Bluff School	Sulphur Bluff ISD	112910001	446795
Thomas A. Edison High School	San Antonio ISD	015907003	446260
Thomas Jefferson High School	San Antonio ISD	015907007	446265
Union Hill High School	Union Hill ISD	230904001	440630
United South High School	United South ISD	240903002	444059
Valley View High School	Valley View ISD	049903001	445507
Weslaco High School	Weslaco ISD	108913001	447440
Wilmer-Hutchins High School	Wilmer-Hutchins ISD	057920002	443505

APPENDIX B

MEANS AND STANDARD DEVIATIONS FOR PSAT AND TAKS SCORES FOR ALL ETHNICITIES

	White (n=403)		Hispanic (n=2626)		African American (n=153)		Other (n=61)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
PSAT Verbal	45.67	9.72	37.49	8.27	37.31	8.58	43.92	10.66
PSAT Math	46.82	10.28	39.70	9.02	38.86	7.70	46.36	11.37
PSAT Writing Skills	48.83	9.59	43.03	7.05	42.36	6.92	46.92	8.64
TAKS Reading	2186.46	214.11	2120.06	209.61	2127.38	166.02	2192.59	226.36
TAKS Math	2165.86	217.93	2090.35	196.53	2053.35	173.85	2189.3	214.16
TAKS Science	2107.23	249.00	1980.61	263.39	1975.86	244.50	2103.59	278.76
TAKS History	2253.48	274.11	2144.75	238.73	2135.27	214.74	2295.59	194.34

APPENDIX C

LEVENE STATISITCS FOR TEST SCORES FACTORED BY ETHNICITY

Exam	Levene Statistic	Significance
PSAT Verbal	10.77	<.001
PSAT Math	9.53	<.001
PSAT Writing Skills	38.74	<.001
TAKS Reading	2.96	.052
TAKS Math	4.57	.010
TAKS Science	.88	.413
TAKS History	3.09	.045

VITA

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EDUCATIONAL HISTORY

2004	Doctor of Philosophy Educational Human Resource Development Texas A&M University College Station, TX
1999	Master of Science Educational Human Resource Development Texas A&M University College Station, TX
1998	Bachelor of Arts Psychology Texas A&M University College Station, TX

EMPLOYMENT HISTORY

5/01-Present	Coordinator of Applied Technology for Teacher Enhancement The Texas A&M University System Institute for School-University Partnerships College Station, TX
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11/99-1/00	Graduate Assistant Educational Human Resource Development Department Texas A&M University College Station, TX