Characteristics of Alternative Public High Schools: A National Study Using the 2003-04 Schools and Staffing Survey

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CHARACTERISTICS OF ALTERNATIVE PUBLIC HIGH SCHOOLS:
A NATIONAL STUDY USING THE 2003-04
SCHOOLS AND STAFFING SURVEY

by

Lisa Ryan

A Dissertation
Submitted to the
Faculty of The Graduate College
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requirements for the
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Department of Educational Leadership, Research and Technology
Advisor: Jianping Shen, Ph.D.

Western Michigan University
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CHARACTERISTICS OF ALTERNATIVE PUBLIC HIGH SCHOOLS:
A NATIONAL STUDY USING THE 2003-04
SCHOOLS AND STAFFING SURVEY

Lisa Ryan, Ph.D.
Western Michigan University, 2009

Decreasing the high school dropout rate in the United States is gaining a great
deal of national attention. One of the key strategies that has been identified to decrease
dropout rate is to offer at-risk students alternatives to traditional school. This study
contributed to our knowledge about alternative high schools for at-risk students by using
data from the large-scale, nationally representative 2003-04 Schools and Staffing Public
School Survey. Using an effective schools conceptual framework, the author used
logistic regression analyses to compare the characteristics of regular and alternative
public high schools. An overall model was created that could predict two thirds of the
variance associated with the dependent variable. The author also conducted multiple
regression analyses to determine which of the five constructs of school inputs, school
structures, classroom structures, student support, and program rigor and relevance, were
statistically significant predictors for the outcome measures, which included graduation
rate, percent attendance at 2-year college, percent attendance at 4-year college, and
average daily attendance at public alternative high schools for at-risk students. Several
significant findings were discovered, for example, classroom structures and processes
were found to be associated with graduation rate at public alternative high schools.
Implications of the findings were discussed.
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I would also like to thank Dr. Jianping Shen of Western Michigan University for demonstrating his understanding that students of all ages need rigor, relevance and encouragement from their teachers.

Lisa Ryan
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CHAPTER I
INTRODUCTION

In an era of increasing technological advances, and a knowledge-based economy, the minimum requirement of a high school diploma has become more important than ever. Yet, in the 2003-2004 school year only 75% of students in the United States who had started in public and private high schools four years before, earned diplomas (National Center for Education Statistics, 2007). Students who drop out of school create issues not just for schools, but for society in general. The National Governors Association, in a compact signed by all fifty governors, as well as representatives from other education organizations, stated "High school success is more important than ever for the health of economy, for civic life, and to ensure equal opportunity" (National Governors Association, 2006, p.1). The economic fall-out from students leaving school affects schools in the form of decreased funding; it also affects whole communities in the form of unemployment and an increased drain on social services, and even incarceration. Certainly, preventing students from dropping out is more cost effective than paying for the social ills that can result from school failure (Hodgkinson, 1989). Household names such as The Oprah Winfrey Show (2006), Time magazine (Thornburgh, 2006), Bill and Melinda Gates Foundation (Bridgeland, DeJulio, & Morison, 2006), are drawing the public's attention to this national crisis. The America's Promise Alliance is currently holding dropout prevention summits in major cities all over the country.
(americaspromise.org, 2008). In fact, “raising graduation rates has become a national priority” (Lehr, 2004, p. 1).

Some high schools are geared specifically for students who are at-risk of dropping out. They are called alternative high schools, continuation high schools, learning centers and other names. It is their special mission to take students who are already experiencing academic failure and help them to be successful in school. It is their job to take students that have had behavioral or attendance problems throughout their school career, and make them ready for the world of work, to go on to college or technical training, and to become productive members of society. In 2002, the U.S. Department of Education defined an alternative school as “a public elementary/secondary school that addresses need of students that typically cannot be met in a regular school, provides nontraditional education, serves as an adjunct to regular school, or falls outside the categories of regular, special education, or vocational education” (NCES, 2002, p. 7). It is these schools, their processes, and structures, which were the main interest of this study.

Background of the Study

Timothy Young (1990) documented the history of alternative education and believes that the idea of alternative school can trace its roots back to the very beginning of American education; however, the modern idea of an alternative to traditional public education started in the 1960’s and corresponded with the civil rights movement and national reforms in education. Alternative schools first developed outside of the public school arena. One category was known as Freedom Schools, which sought to improve the substandard education that minority students were receiving. It had an emphasis on
community involvement and determination. Another category, known as Free Schools, concentrated on the individual fulfillment of the student and paved the way for the open-school concept that emerged in public schools. "Open schools were characterized by parent, student and teacher choice, autonomy in learning and pace, non-competitive evaluation, and a child-centered approach" (Lange & Sletten, 2002, p. 10). According to Raywid (1981), the number of public alternative open schools exploded in their first decade of existence, but by the 1980's a more conservative approach had returned to education and the alternative schools began to be geared more towards disruptive or failing students. In a limited review of state alternative programs, Lange and Sletten (2002), found that most states have a category of service called alternative, and that almost all current alternative programs are designed for secondary students who are at risk of school failure.

Creating alternatives for students who have been expelled, suspended, or otherwise having trouble in the tradition school seems to be increasingly popular with school districts across the country. In 1999, The National Alternative High School Youth Risk Behavior Survey estimated that 1,390 alternative high schools (schools with any of grades 9-12) served more than 280,000 young people nationwide or almost 2% of total high school enrollment (Grunbaum, et al., 1999). A Michigan statewide study conducted in 2000 showed that 5% of all high school students were attending alternative education programs (Michigan Alternative Education Study Project, 2000). In October 2001, the National Center for Educational Statistics estimated that 10,900 alternative schools or programs in 39 percent of the nation's school districts were serving 612,900 students daily which is 1.3 percent of all public school students, not just high school.
students, and 53 percent of these programs had a capacity that did not meet the demand for enrollment (Kleiner, Porch, & Harris, 2002).

Clearly, alternative education is an important choice for students who are struggling with traditional education. Recently, Jay Smink and Mary S. Reimer (2005) in their comprehensive truancy prevention document, listed alternative education as one of the fifteen key strategies to decrease the absenteeism and truancy which lead to dropout. “Creating alternatives for struggling students” also made the list of the ten strategies for graduation success of America’s Promise (Americaspromise.org, 2008), as did “expanding students graduation options” in the National Education Association’s twelve dropout action steps (National Education Association.org, 2008).

How these alternative school work to achieve their mission can vary a great deal. Some schools are separate entities with their own building and principal. Some “schools” are really programs being run from within the traditional school, while other school districts have more that one alternative school or program, each serving different populations. Some alternative schools are designed with a strict disciplinary structure, others follow humanistic principles, and still others serve mainly as academic remediators (Raywid, 1994). In a nationally representative study in 2001, the National Center for Educational Statistics found that 59 percent of all alternative programs were housed in a separate facility from a regular school, 4 percent of programs were found in juvenile detention centers, 3 percent in community centers, and 1 percent were charter schools (Kleiner, Porch, & Harris, 2002).

Not only does the structure of alternative schools vary widely, but so does their quality. Many view alternative high schools as dumping grounds for troubled kids, a
place to isolate them from mainstream students. Many educators now inextricably link 
“alternative” with kids whom society has judged disadvantaged, disruptive, or unwanted. 
“Alternative at-risk programs have a bad reputation, in part, because many of these 
programs deserve a bad reputation and as result, many people equate alternative with 
second rate” (Kellmayer, 1998, p. 27); yet, a noteworthy number of positive things are 
happening in alternative schools. Some experts believe that “alternative schools can 
serve as models for any school that seeks innovative change” (Raywid, 1994, p. 26).

One thing about alternative high schools seems clear: the populations they serve 
are some of the most vulnerable in our society. Students who attend alternative high 
schools are more likely to engage in high-risk sexual behavior (Buzi, 2003) and have 
other social and health risk factors (Kubik, Lytle, & Fulkerson, 2004). An estimated 12% 
of alternative school students are students with disabilities, in particular learning 
disabilities and emotional and behavioral disorders (Lehr, 2004). School districts with 
alternative high schools are more likely than other districts to be urban, with high 
poverty, and greater minority populations (Kleiner, Porch, & Harris, 2002).

Much has been written about what constitutes an effective alternative school 
(Kellemayer, 1998; McDonald, 2002; Kerka, 2003). Unfortunately, the literature 
includes very little outcomes-based evidence. Most of the research related to schools for 
at-risk students stresses the importance of the social and emotional health of these 
students. Teacher and peer relationships are emphasized, as is the family atmosphere of 
the school, but as one researcher noted, “once the students leaves the school feeling 
‘good’ about themselves, they haven’t the academic skills and social wherewithal” 
necessary for continued success (Munoz, 2004, p. 2). As increased emphasis is placed on
conducting educational research in a scientific manner, (Schneider, Carnoy, Kilpatrick, Schmidt, & Shevelson, 2007) schools for at-risk students deserve careful attention, too. These schools are the final levee positioned to prevent the flood of high school dropouts on society, and they should be evaluated by the same standards as all schools.

Focus of the Study

High schools all across the United States, not just alternative high schools, are working hard to retain students and help them secure an adequate level of educational attainment for success in life. The need to retain students has also risen to a higher priority since state and federal mandates have made student retention and graduation rates high stakes for the schools themselves. Increasingly, research on effective schools is showing that it is not just the students' personal characteristics like their social and academic background, but organization and structure of schools that can affect students' decisions to drop out (Lee & Burkham, 2001). There are efforts of every kind to adjust the programs and organization of the schools in order to decrease the dropout rate (Smink & Reimer, 2005; Lehr, 2004). Alternative schools provide a microcosm of different programs and organizations, and serve specifically the at-risk population, and therefore offer a unique vantage point from which to view this issue. School districts and policymakers need direction about how to best design alternative schools, by knowing what factors most influence schools' ability to retain students, help them graduate and move on to higher education.

This study added to the small body of quantitative research on public alternative education in the United States by examining the data from a nationally representative
sample of public alternative high schools to determine which variables or groups of variables could be used to define public alternative high schools as a school type, and which could be used as predictors of effectiveness, or increased outcomes, at these schools.
CHAPTER II
REVIEW OF THE LITERATURE

Although this study focused on alternative schools, the review of the literature starts with the broad perspective of effective schools research that helps outline ways in which quantitative, whole school research is conducted. It then moves to dropout prevention research which is becoming a huge body of research conducted mostly in traditional schools, but that clearly provides background theory for all schools interested in helping students graduate. Finally, the review of the literature moves to the small body of research that relates specifically to alternative schools. Together these theories provide the building blocks of the conceptual framework of this study.

Effective Schools Research

There is a vast body of research on effective schools with a variety of conceptual frameworks. One widely used conceptual framework is the economic model of schools (Hanushek, 1989) in which school inputs and processes lead to school outputs. School inputs include student characteristics like percent minority, socioeconomic status (SES), and academic background, as well as structural characteristics, like urbanicity, school type (public, Catholic, other private), and school size, and school resources. Schools have little control of school inputs, but a great deal of control over school processes. School processes include policies and programs, decision making strategies, curriculum and school climate. School outputs that are most often student achievement
measurements in the form of test scores, but other school outputs like absenteeism, dropout rates, and students’ engagement are also used.

The effective schools research falls into two theoretical perspectives. The common perspective holds that all school variables affect the different measurable outcomes in the same way, so test scores and dropout rates would both be improved by changing certain school characteristics, as shown in Figure 1. The differentiated perspective views different outcomes as being influenced differently: school characteristics that improve test scores may not improve dropout rate because different school practices and policies are needed to influence each (Rumberger & Palardy, 2005). In this way, effective schools research, and dropout prevention research overlap. Other effective schools research also takes into account student level inputs and outputs, and is conducted with hierarchical models because individual student characteristics are shown to affect the characteristics of the whole school, known as contextual effects.

![Figure 1. One example of School Level Analysis of Effective Schools (Rumberger and Palardy, 2005)](image)

Many factors have been examined in attempting to identify schools that produce improved outcomes for students. They include school structures, climate, academic organization, policies and procedures, and teachers. Unfortunately, there is good deal of empirical data, but it is not all consistent on what school characteristics lead to improved
outcomes for students. One area where the data is consistent shows that Catholic schools are more effective because of the strong academic focus, strong relationships between staff and students (social capital) and strong parental involvement (Bryk & Thum, 1989).

In the age of accountability, practitioners as well as policymakers, need hard evidence of program effectiveness. Federal legislation, the No Child Left Behind (NCLB) Act of 2001 requires that all states measure “adequate yearly progress” of their schools and districts in meeting state defined standards (U.S. Department of Education, 2004).

Lately, some of the effective schools research has concentrated on the other outcome measures besides test scores. Lehr’s (2004) comprehensive examination of dropout prevention programs found five categories of outcomes used to measure effectiveness: academic/cognitive indicators, like grade point average and test scores; physical presence, indicators like attendance and graduation rate; psychological indicators, like self-esteem and depression inventories; social/behavioral indicators, like behavioral problems, and drug use; and support for learning indicators, like school climate. The American Youth Policy Forum created a compendium of youth programs that had been rigorously evaluated (James, 1999), but these programs were hard to find. Evaluation of programs is not only costly, but time intensive and most small alternative high schools, and school districts do not have the resources to do it well.

Graduation rate is an important measure of school effectiveness. A school’s ability to retain its students and help them graduate is a key indicator that their programs are working. Some researchers believe graduation rate is a key measure of any program aimed at dropout prevention (Lehr, 2004). Other researchers believe that a differentiated
A perspective of school effectiveness puts cognitive measures like standardized test scores in opposition to other measures like graduation rate (Rumberger & Palardy, 2005). Schools that have the highest graduation rates may give insight into the types of programs and organization that help them retain their students. It may provide helpful information for solving this nation’s drop-out problem.

Recently, however, debate has centered on how graduation rate should be defined. Policy makers question whether graduation rate is the number of students who graduated that school year who started in the twelfth grade that year, or if it is some other definition that includes all students who started in high school at that particular school. Some question whether students who receive a certificate of completion, or a General Education Diploma (GED), should be included, or if only students who receive a traditional diploma should be counted. A recent study conducted by the National Center for Educational Statistics using the Common Core of Data for all schools, used the average enrollment from the eighth, ninth, and tenth grades from 4, 3, and 2 years prior to the graduation year in order to create the number by which to divide the number of graduates. Using this method, it reported the national average graduation rates from the school years 2001-2002 and 2002-2003 to be 72.6% and 73.9%, respectively (Seastrom, Hoffman, Chapman, & Stillwell, 2005). In a 2005 compact, the National Governors Association agreed to take steps to implement a standard, four-year adjusted cohort graduation rate to be used by all states:

States agree to calculate the graduation rate by dividing the number of on-time graduates in a given year by the number of first-time entering ninth graders four years earlier. Graduates are those receiving a high school diploma. The denominator can be adjusted for transfers in and out of the system and data systems will ideally track individual students with a longitudinal student unit record data system. Special education students
and recent immigrants with limited English proficiency can be assigned to
different cohorts to allow them more time to graduate (p.1)

Attendance measures may be used as an additional indicator to determine if a
school is making adequate yearly progress (AYP), and thirty-seven states have chosen to
do so. As a result, many states are reviewing their attendance polices, or creating new
attendance requirements (Smink & Reimer, 2005).

**Dropout Prevention Theory**

St. Germaine (1995) summarized the leading theories of the causes of students
leaving school in the following way; Deficit Theory, in which individuals come from
educationally impoverished backgrounds and communities and are ill-prepared and
supported at home; Organizational Theory, in which the school is the responsible for
student failure because of its poor organization, and use of time and resources; Economic
and Political Theory, in which certain groups are marginalized in society and school;
Cultural Theory, in which the teacher-learner interaction is harmed by language and
cultural differences; and finally, Cultural Discontinuity which is a combination of the last
two theories, and especially applies to urban minorities, and other ethnic minorities.
Cultural Discontinuity actually creates contrasting goals for the students wherein success
in school could be construed as a failure in the community. Students perceive that school
success is a way of abandoning their culture of origin.

**Student Characteristics**

Many studies have looked at the characteristics associated with students dropping
out of school. The risk factors can range from problems associated with school, family,
and community to the individual student. One recent study, that used data from the
National Longitudinal Survey of Youth (NLSY 97) found the three risk factors, academic failure, low socio-economic status, and behavioral problems all had a major impact on the decision to drop out of high school, and that the risk of dropping out increased with the multiple risk factors (Suh & Suh, 2007). Student demographics, alone, although considered to be a risk factor, do not necessarily predict who will stay in school. Especially in urban districts, where many students have demographic risk factors, educational engagement is a better predictor of who will stay in school (Jerald, 2006).

Smink and Reimer (2002, p. 5) in their report for the National Dropout Prevention Center/Network note that “students report a variety of reasons for not attending school, being truant and dropping out of school: therefore, the solutions are multidimensional.” A major study sponsored by the Bill and Melinda Gates Foundation conducted interviews with high school dropouts from several communities throughout the country. Although they do not claim their study to be nationally representative, they revealed the top five reasons that students listed for dropping out of school as follows: the classes were not interesting, they had missed too many days of school and could not catch up, they spent time with people who were not interested in school, they had too much freedom and not enough rules in their lives, and were failing in school (Bridgeland, Delulio, & Morison, 2006).

School Characteristics

Recently, much of the dropout prevention research has focused on the interaction between student and school as a major factor in dropout prevention. Many of the factors that put students at-risk of dropping out are out of the control of the school, but others are not. One study noted school-related problems such as disliking school, poor grades, not
being able to keep up with school work and not getting along with teachers as four of the
top six reasons for dropping out (Coley, 1995). Another researcher used data from the
High School and Beyond (HSB) survey to reveal that students who participate in high
school athletics and fine arts extracurricular activities have a significantly less risk of
dropping out (McNeal, 1995). In general, disengagement from school, through
absenteeism, academic failure, and behavioral issues, are all warning signs of the
potential for dropping out. Some researchers, using longitudinal studies, believe these
factors contribute to a long-term disengagement from school, and can be identified as
early as the first grade (Alexander, Entwisle, & Horsey, 1997); consequently, more
attention is being focused on interventions at earlier grade levels.

One very successful and carefully evaluated dropout prevention program from
southern California targeted students in middle school grade levels. Called Achievement
for Latinos through Academic Success (ALAS), it aimed at increasing school
achievement and completion in Chicano students, by using strategies that involved four
spheres of influence that affect student achievement: the students, the school, the family
and the community. After two years in the program, and even two more years after the
intervention, the students in the program showed significant improvement in their
progress in school, and greater numbers stayed in school compared to a control group

Paying attention to the accumulation of high school credits appears to be an
important method of tracking the problem. Recent data from the National Center for
Educational Statistics using data from the Educational Longitudinal Study of 2002
showed that high school dropouts earned fewer credits in each year of high school
compared to on-time graduates, and that the credit gap between the two groups increased throughout their years in school (NCES, 2007). The Consortium on Chicago Schools Research using high school completion rate data from the Chicago Public Schools identified on “on-track” indicator, those students who were basically on-track, having lost no more than one semester of credit in a core subject during their freshman year, as an important predictor of staying in school (Miller, Luppescu, & Correa, 2003). These researchers also noted that middle school test scores were not a good predictor of dropout.

More and more attention is being paid to the role that schools play in the retaining students or pushing them out. Lee and Burkham (2001) conducted a multilevel analysis on the role of school organization and structure in dropping out of high school using data from the High School Effectiveness Supplement (HSES) of the National Education Longitudinal Study (NELS:88). They discovered several factors in school organizations that are related to holding students in school: a “constrained academic curriculum” (one in which all students are expected to follow a higher level curriculum, with few remedial or nonacademic classes offered), small but not too small school size, and more positive relationships between students and teachers. Another study noted that at-risk students benefited, especially, from school organizations in which there was an orderly environment, committed faculty, and an emphasis on academic pursuits (Bryk and Thum, 1989).

Other researchers have also shown that school size can make a difference. Beginning in the 1980’s researchers began to recognize that small high schools seemed to be meeting the needs of students better than large high schools. There now exists a
growing body of evidence that shows that small high schools outperform large high schools in virtually all performance measures: graduation rate, number of graduates going on to college and graduate’s success in the labor market (Hylden, 2005). Even by breaking already large schools into smaller learning communities in the same building, overall success of the students increases (Cotton, 2001). In addition, smaller schools are places where students feel that they belong. They feel more respect and show more respect for others. Incidences of violence and theft are much lower at smaller high schools than large ones (Meier, 2003).

One large, nationally representative, longitudinal study, that measured mathematics and reading gains over students’ high school careers, found that the optimal size for an effective high school is “middle sized”, between 600 and 900 students (Lee & Smith, 1997). Schools of this size also fair best when measured for equity: there was less correlation between a student’s socio-economic status, and achievement.

The benefits of small school size are especially important for the at-risk population of students. Students who have problems with authority find that there is no “us versus them” at small schools. The small school size forces students to move out of cliques and get to know more, different people (Meier, 2003).

Small school size has also been shown to decrease the overall cost of a student’s high school education. In an analysis of the budgetary expenditures per high school graduate of New York City High Schools, the smaller schools, although their per student cost was higher, actually cost among the least per graduate compared to other high schools because of their decreased dropout rate (Steifel, Iatarole, Fruchter & Berne, 1998).
There are some down-sides to small high schools. One researcher demonstrated that students' felt constrained by family reputation, and less curricular choice, and innovative programming (Lee, Smerdon, Alfeld-Liro, & Brown, 2000). In addition, much of the positive research has been done on schools that have chosen to be small, when in fact; most small schools are small by default.

Extending the school day with after school programming or lengthening the school year has been shown to improve students' academic performance. In a ten year evaluation of the statewide extended school services (ESS) program in Kentucky, 78% of the students responded that they were better students this year as a result of the ESS program (Meehan, Cowley, Chadwick, Schumacher, & Hauser, 2004). Quality, extended school or after-school programs are also implicated in decreasing criminal activity of juveniles. Nearly one half of all juvenile crime takes place between the after-school hours of 2:00 and 8:00 pm (Fox & Newman, 1997). If students are engaged in productive after-school activities they will not have the opportunity to get involved in non-productive or criminal activities.

Curriculum Characteristics

Another school process that can make a difference for at-risk youth is career and technical education. There is a growing body of research that links high school CTE with reducing the likelihood that students will dropout (Stone, 2004). Two studies of the effect of career academies on student outcomes showed increased grade point averages, better attendance rates, and higher four-year graduation rates. (Elliott, 2002; Conchas, 2002) Career academies were also shown to substantially increase the labor market prospects of young men after graduation (Kemple, 2001).
Classroom Characteristics

Lots of attention is being paid to what goes on in classrooms that can make a difference for at-risk students. Increased use of technology in schools can improve student achievement and engagement. One high school in Alabama with a high dropout rate showed improved scores on the Alabama High School Graduation Examination for students that used PLATO computerized learning (Quinn & Quinn, 2002). One consideration, however, is that many at-risk students have learning and behavioral disorders, including attention deficit hyperactivity disorder (ADHD). In general, open classrooms, in which students are free to move around, and come and go from the room, and work at their own pace, which frequently is the case in computerized learning centers, are not recommended for students with ADHD. These students need highly structured, but stimulating, environments (Harrell, 1996).

Zepeda and Mayers (2006) conducted a review of all research related to block scheduling, a classroom reform effort that became popular in the 1990’s as schools struggled to provide more learning time, especially in the core academic areas, while maintaining other school structures. They looked at fifty-eight empirical studies of block scheduling, some quantitative, some qualitative, and some with mixed methods, that were grouped into five research areas. The summary of the research revealed that block scheduling did appear to increase students’ grade point averages, and improve school climate although the results on standardized test scores and attendance were inconsistent. Part of the value of block scheduling is that teachers will change the way they teach, and do more interdisciplinary teaching and project-based learning during the longer block of
instructional time; however, this review of studies revealed that block scheduling did not necessarily lead to changes in teachers’ instructional practices and that teachers’ believe they need more professional development related to block scheduling.

Another important classroom structure is class size; investigations into the effect of class size on student achievement have been going on for a long time. Robinson (1990, p. 1) reviewed many studies and noted that “class size effects on student learning vary by grade, pupil characteristics, subject area, teaching method, and other learning interventions.” However, a landmark large scale randomized field trial, with both short and long term evaluations, supports the effect of class size on student achievement. Project STAR, The Student Teacher Achievement Ratio, the Tennessee class size experiment, was sponsored by the Tennessee Department of Education was conducted from 1985 to 1989, by randomly placing students in kindergarten into three groups: small class size (15 students), regular class size (22 students) or regular class size (22) with a teachers aide. Students stayed within their experimental grouping through 3rd grade, while teachers were randomly assigned to the groups. Over 11,000 students participated in the study throughout the four years. The results of this study showed unambiguously that small class size increased student’s academic achievement in math and reading by the end of the third grade. A five year follow-up study to Project STAR showed 8th grade students who had been in the small-sized classes outperformed their counterparts by an average of 14 months of schooling in reading and 13 months of schooling in math. Another follow up study showed the students from the small class sizes were significantly more likely to graduate on time (Boyd-Zaharias, 1999). Another study specifically looked at the benefits of Project STAR for minority students. The
repeated measures analysis showed a statistically significant positive differential in the reading scores of minority youth that were part of smaller classrooms. This research supports the ideas of reducing class size as a way to reduce racial and ethnic inequality in schools (Nye, Hedges, & Konstantopoulos, 2004).

A different national study that examined the effects of class size used structural equation modeling to correlate school level data from the Schools and Staffing Survey with state assessment and National Education Assessment Program to show that average achievement score are higher in schools with smaller class sizes (McLaughlin, Drori, & Ross, 2000).

Finn, Pannazzo, and Achilles (2003) looked at the “why” of class size effects on student achievement. By conducting a review of studies, they looked at two theories that have been used explain improvement in achievement in smaller classrooms (under twenty students). One theory, that teachers change their instructional strategies in smaller classrooms, was generally not supported in the research, while the other theory, that students’ behavior and classroom engagement improves leading to increased achievement, generally was supported. The authors believe that more research is needed in this area, but in light of the importance of school engagement in dropout prevention, decreasing class size may help to ensure that students do not “fall through the cracks” and become disconnected to the school.

**Student Support**

Many people view drop-out prevention as a process that requires the whole community, especially cooperation among community organizations and the schools. (Americaspromise.org, 2008; Smink & Reimer, 2005). The social problems that students
face in the community frequently affect students' ability to learn, and communities often struggle to provide the social services that many of the neediest citizens require. One way to address these problems, especially teen pregnancy, is by having on-site health care clinics in school settings. These clinics meet the needs of pregnant teens in more affordable, accessible and appropriate ways than traditional health care (Levy, 1987). Intervention studies have been done that look at the effect an integrated health care/mentoring approach on absenteeism in a high risk population. Although the results of this study were somewhat limited, all indications point to the benefit of addressing students' health care needs as a means to improving their school success (DeSocio, et. al, 2007).

There have also been model programs, called Integrated Services, in which schools are the center of an integrated network of community services and provide a link between these services and families (Abdal-Haqq, 1993). School-based childcare programs for children of teen parents have been shown to increase attendance and graduation rate of teen parents (Crean, Hightower, & Allen, 2001). In addition, there is some research that community service programs have been identified as a way to engage urban youth with their communities, decrease their alienation from society, build their self-esteem, and empathy for others, all of which can lead to greater success in school (Lewis, 1992).

There are many dropout prevention programs that appear in the literature, but not all meet the research standards. In an effort to improve the quality of research in education, the Institute for Educational Sciences, part of the U.S. Department of Education, created the What Works Clearinghouse in 2002. The mission of the WWC is
to conduct careful literature reviews on current topics and evaluate the research by rigorous standards in order to provide policy makers and practitioners and the public high quality information on what works in education. In July, 2007 they produced a report that had reviewed fifty-nine studies of dropout prevention programs. Only sixteen of those studies passed the WWC evidence review, some with reservations (WWC, 2007). Two programs that emphasized student support services of high school age students were included in the WWC dropout intervention report. One program called Quantum Opportunity program was a comprehensive, mostly after school program that offered case-management, mentoring, tutoring, social supports, community service opportunities, and even financial incentives for participating students. Students could enter into the program in ninth grade and stay in it for up to five years, even if they transferred schools, dropped out or were incarcerated. The program ran year round and hoped to have each student participate for 750 hours annually. It served 580 students in seven different urban, communities across the country. The goal of QOP was to increase rates of high school graduation, and enrollment in postsecondary education or training (Schirm, Stuart, & McKie, 2006). A randomized, controlled study of the program, which analyzed survey data, achievement data in reading and math as well as high school transcripts, was funded by the United State Department of Labor and the Ford Foundation. In the study, data from participating students was compared to a statistically similar, control group. According to WWC evaluation of the study, the QOP yielded no discernible effect on students progressing in school or completing school (WWC, 2007).
Case Studies

There were some model school programs evaluated by the high standards of What Works Clearinghouse research that showed promising results. The Talent Development High School model aimed to improve the academic achievement of students in large, comprehensive high schools. It operated at thirty-three high schools across the country. The school model contained five main features: small learning communities, organized around interdisciplinary teacher teams that shared the same students and had common daily planning time; curricula leading to advanced English and mathematics coursework; academic extra-help sessions; staff professional development strategies; and parent- and community-involvement in activities that fostered students’ career and college development (Kemple, Herlihy, & Smith, 2005).

In the quasi-experiment study of the Talent Development High School that was evaluated by WWC, five Talent Development High Schools in Philadelphia were compared with six statistically similar Philadelphia high schools. In these schools ninth grade students were organized into small learning communities, and upper grade students were organized in career academies. All students followed a college preparatory curriculum, and were held to high academic standards. Although WWC considers the extent of the evidence to be small, the program did show potentially positive results (an average increase of seven percentage points) in students’ progress in school. No data was available for students completing schools (WWC, 2007).

Project GRAD (Graduation Really Achieves Dreams) was another comprehensive kindergarten through twelfth grade school reform program, whose goal was to increase high school graduation rate and college enrollment. This program worked within existing
systems, but retrained teachers to utilize consistent strategies in reading, mathematics, and classroom management throughout all feeder schools. It had programs in eleven cities across the country. Support to the schools and school district was provided by the Project GRAD USA organization, as well as a local team, so that commitment to the program continued throughout changes in school leadership. According to Project GRAD USA reports, students in the feeder schools showed significant improvement in national test scores compared to similar schools, and they increased the number of students attending college by 400% (Project GRAD USA, 2008). However, according to WWC, and their evaluation of the Project GRAD data, the program showed no discernible effects on students progressing in school or completing school (WWC, 2007). One limitation of the WWC evaluation is that it looked at data from students that did not receive full implementation of the program at all grade levels, and further evaluation is probably warranted (Project GRAD USA, 2008).

Comprehensive Reform

As the dropout problem in the nation’s schools is becoming more widely acknowledged and publicized, various organizations are stepping forward to make comprehensive recommendations to address the problem. America’s Promise, a national nonprofit partnership organization founded by former Secretary of State Colin Powell, has a mission to see that all children in the United States receive the fundamental resources that they need to succeed. They have established high school dropout prevention as one of their priorities. They recommend ten strategies for graduation success:

Support accurate graduation and dropout data. Establish early warning systems to support struggling students. Provide adult advocates and
student supports. Support parent engagement and individualized graduation plans. Establish a rigorous college and work preparatory curriculum for high school graduation. Provide supportive options for struggling students to meet rigorous expectations. Raise compulsory school age requirements under state laws. Expand college level learning opportunities in high school. Focus the research and disseminate best practices. Make increasing graduation and college and workforce readiness a national priority. (Americaspromise.org, 2008)

The ideas found in dropout prevention research, apply especially in alternative schools.

Alternative Schools

There is controversy and ambiguity when the term alternative school is used. Some alternative schools are just off-shoots of the regular high school without a separate name or identity. Some alternative programs are part of adult education programs. Many alternative programs do not grant diplomas, but only give General Education Development (GED) training and testing. Some alternative programs are highly structured, even militaristic. Other programs use the hands-on training, and job skills, as their main means of education. There are programs for pregnant teens, youth in the criminal justice program, and substance abusers. The term alternative school is also sometimes applied to schools that serve the gifted and talented, or special schools for the arts, math or sciences. In her review of the literature of alternative education Ana McDonald (2002) stated

There seems to be no consensus on how alternative programs should be structured. Descriptions include career academies, charter schools, college-based alternative schools, continuation schools, correctional facilities, group homes, hospital classes, juvenile court schools, magnet schools, opportunity schools, residential schools, schools-within-a-school, schools without walls, second-chance schools, separate alternative
learning centers, summer schools, residential substance treatment programs, tech-prep schools, and youth camps. (p. 2)

Raywid (1994) used a classification system to help understand the different types of alternative schools. Type 1 schools use the humanistic principles of choice and empowerment to create unique atmospheres that meet student and teacher needs. Type 2 schools are considered punitive in nature and students are sent there from the traditional school. Type 3 schools emphasize social and emotional growth and remedial education. Students often plan to return to their home schools after attending these programs. Others summarized the types of alternative schools by their philosophies:

“If the philosophy is that the student need to be changed then the alternative program seeks to reform the student. If the philosophy is that the system needs to be changed then the alternative program provides innovative curriculum and instructional strategies to better meet the needs of the students.” (Quinn, Poirier, Faller, Gable, & Tonelson, 2006, p. 15)

Even if an alternative school is defined as one who serves at-risk students, there is room for ambiguity, because there is no distinct definition of an at-risk student, as was noted in the review of the dropout prevention research. In general, students at-risk of school failure are considered to have a greater chance of having educational disability because of their background. They are likely to experience academic failure and are socially disconnected (Croninger & Lee, 2001). They are also more likely to commit acts of violence, and be involved with the judicial system (Bickford, 2001).

A nationally representative study of students that attend alternative high schools conducted by the Centers for Disease Control, in 1998, helped to identify the types and quantity of high risk behaviors that students participate in. Students that attend alternative high schools were significantly more likely to have smoked cigarettes, smoked marijuana, drunken alcohol, and used cocaine, and carried a weapon in the 30 days before
the study, compared to regular high school students. They were also significantly more likely to have been in a physical fight or attempted suicide in the year before the survey. The incidence of them not wearing seatbelts, driving after drinking alcohol, and having unprotected sex was also much higher. They were less likely to participate in regular physical activity, but showed no significant difference in being overweight (Grunbaum, et al., 1999).

In an effort to quantify and better define the state of alternative education in the United State, a comprehensive, nationally representative survey of the alternative high schools and programs was conducted by the National Center for Educational Statistics in 2001 using the Fast Response Survey System (FRSS) (Kleiner, et. al., 2002). Distributed at the school district level, it created estimates of many characteristics of programs for at-risk students. Some of the key findings were: large school districts, districts in the southeastern United States, districts with high minority populations, and districts with high poverty concentrations were more likely to have alternative schools or programs for at-risk students. Alternative schools and programs were found at all educational levels, high school, middle school, and even elementary school. 59 percent of all alternative programs were housed in a separate facility from a regular school. 4 percent of programs were found in juvenile detention centers, 3 percent in community centers, and 1 percent were charter schools. 53 percent of alternative programs for at-risk students had a capacity that did not meet the demand for enrollment in their program. Most programs created waiting lists of potential students to help deal with this problem.

The survey also showed that the percentage of students enrolled in alternative programs for at-risk students that were special education students (with Individualized
Education Programs) did not differ significantly from the numbers of special education students in all schools: 12 percent compared to 13 percent.

The survey asked about the services and practices that were made routinely available to students. 91 percent had a curriculum for a regular high school diploma, 87 percent provided academic counseling, 85 percent had smaller class sizes, 84 percent gave remedial instruction, 83 percent had chances for self-paced instruction, 79 percent provided crisis or behavior interventions, 79 percent had career counseling, 58 percent provided psychological counseling, 55 percent had social work services, 48 percent gave vocational or skills training, 44 percent of students had the opportunity to take classes elsewhere, 41 percent of programs provided training for the GED, 37 percent used peer mediation, 29 percent had an extended school day or year, 26 percent had security personnel on site, and 25 percent had evening or weekend classes.

The study examined the collaboration of alternative school programs with other community agencies. On average the districts collaborated with 6.9 of twelve different community agencies to provide services to their at-risk students. These agencies include: community organizations, drug and alcohol clinics, community mental health agencies, crisis intervention centers, family organizations, family planning and child care agencies, parks and recreation departments, child protective services, job placement centers, health and human services agencies, hospitals, juvenile justice systems, and sheriff’s and police departments.

Overall, this study created very useful data that helps define some of the organizational characteristics of alternative education programs in the United States, but contributed no information about the effectiveness of such programs. In addition, because
it was the first nationally representative study of its kind, "it is difficult to say which
direction districts are moving with respect to various facets of public alternative
education" (Kleiner, et al., 2002, p. 35).

Effective Alternative Schools

Currently, there is a small body of mostly qualitative research done on what
works best in alternative high schools, much of it corresponds to what has been learned
from dropout prevention research. Alternative schools are generally intended to provide
supportive learning environments for students that are unsuccessful in the traditional
public school system (Guerin & Denti, 1999). They generally utilize an approach to
education that encourages students to work independently, and decreases the power
struggles between students and staff (Korn, 1990). There are several studies that
demonstrate that the positive relationships between students and teachers, staff and
administrators at alternative schools play a strong role in the schools' success. (Saunders,
2001; DeLaRosa, 1998). Another study shows that positive peer relationships contribute
to the overall quality of the alternative school experience (Coyl et al, 2004).

Hughes and Aldera (2006) reviewed much of the research related to alternative
schools that are especially geared towards students with emotional and behavioral
disorders (EBD), sometimes called day treatment centers, and compiled many
recommendations for strategies that work. Instructional and curricular practices are
known to be important in schools that serve emotionally and behaviorally challenged
students. Students need more time doing- hands-on work and more direct instruction
instead of doing self-paced worksheets. The curriculum should be socially relevant and
include higher-order thinking skills, while being developmentally appropriate. Emphasis should also be placed on real-world practice of social and interpersonal skills, and building emotional wherewithal and self-esteem, as these characteristics play a large role in students' success outside of school. They also identified comprehensive student referral systems, supporting students in their transitions, ongoing program evaluation, and support and training for staff as being very important.

Several researchers have conducted literature reviews to identify the best practices in schools and programs for at-risk students and dropouts. Kerka (2003) identified eight factors that consistently appeared in reports of successful alternative programs: the presence of caring knowledgeable adults, the sense of belonging created by small learning communities, an emphasis on students' assets, treating students with the respect, high expectations for academic achievement, a multi-dimensional, developmental curriculum, learning that connects school and work, and long-term follow-up programs. Another researcher identified ten key characteristics of effective programs for at-risk youth: small size, a rich site, voluntarism, participatory decision making, varied curriculum, separate administration, flexible teacher roles, program autonomy, distinctive mission, family atmosphere, and use of technology (Kellmayer, 1998). Lange and Slatten (2002) created a list of important descriptors of effective alternative schools which included the following: clearly defined goals for enrollment and evaluation, wholehearted implementation, autonomy, student-centered atmosphere, integration of research and practice, training and support for teachers to work with at-risk populations, and links to multiple agencies. Still another researcher found that:

successful alternative educational programs feature small classrooms that create a community atmosphere of courtesy and respect. They are staffed
by highly trained teachers who maintain clearly defined behavioral and academic expectations and a constructivist focus on student needs, interests, and abilities, adapting their curriculum to their clientele (McDonald, 2002).

Unfortunately, much of the research on alternative schools is built on case studies of schools or programs that appear to be having success, but there is a little or no quantitative analysis of measurable outcomes. Many researchers agree that these important educational institutions have been allowed to develop without enough evaluation and oversight (Munoz, 2004). Lange and Slatten (2002, p. 8) stated that “though alternative programs have been in existence for many years, there is still very little consistent, wide-ranging evidence of their effectiveness, or even an understanding of their characteristics.” In addition, very little is written about the outcome measures that should define that success. “The time has come, however, when alternative settings must be accountable for their students’ achievement levels, and the question to be asked is not whether or not our students’ achievement should be measured, but what the most important measure is (Hughes & Adera, 2006, p. 29).”

Only two alterative high school program evaluations qualified for the rigorous review standards of the What Works Clearinghouse (WWC, 2007). One was a controlled, randomized experimental study designed to evaluate Middle College High Schools, which are alternative high schools housed on college campuses designed to help at-risk students complete high school and go on to college. They were generally small, about 100 students and created through collaboration between the college and public schools. These schools emphasized project-based, interdisciplinary curriculum with real-world applications. They provided individualized attention, opportunities for career exploration and special counseling and support. Students had access to all of the college facilities.
The study used a sample of 394 students from Seattle Public Schools, and randomly assigned them to the Middle College High School or some other alternative program. Unfortunately, after two years, survey results showed no significant difference in either the schools staying in school rate or graduation rate compared to the control group of other alternative programs (Dynarski, Gleason, Rangarajan, & Wood, 1998).

Another program that was rigorously evaluated using a randomized, controlled study on 1,600 students at three different sites was the High School Redirection project. High School Redirection was originally started in 1969 in New York Public Schools. It was designed to serve teen parents, dropouts, and students who were behind in credits or had low test scores. Special emphasis was placed on remedial literacy skills, and independent study, with a chance for accelerated credit recovery. Child care was provided for teen mothers, and teachers served as mentors as well as instructors for students. School size and class size were relatively small. In 1997, the U.S. Department of Labor sponsored a project called the Alternative Schools Demonstration Project to recreate High School Redirection in seven urban areas around the country. By the time the What Works Clearinghouse evaluated the study, none of the programs were still in existence because of budget or other pressures. Overall, the WWC found “the extent of evidence for High School Redirection to be moderate to large for staying in school, for progressing in school, and for completing school” and evaluated the effectiveness of the program as having “mixed effects on staying in school, potentially positive effects on progressing in school, and no discernible effects on completing school.” (WWC, April, 2007, p.1)
Another quantitative study, funded by the U.S Department of Education, although not an experimentally designed, looked at the school climate in eleven different alternative school programs. It showed that students at three effective alternative school programs rated some variables (fairness of rules, respect for students, and planning and action) on a school climate survey high or very high when compared to the norm (Quinn, et. al, 2006).

This study added to this body of knowledge about effective alternative schools by looking at some of the constructs identified in the research on both alternative schools and dropout prevention, and examining them through a quantitative, effective schools lens.

Summary of Study

The research related to dropout prevention and alternative schools complement each other: processes that work to prevent dropout are the cornerstones of successful alternative schools. However, most of the research related to alternative schools is ethnographic in nature, thus this researcher hopes to add to this body of knowledge by adding quantitative, school-level analysis of some of the ideas found in the literature. Because alternative schools are unique: they frequently “fly under the radar” of traditional schools and school districts, they have the ability to morph themselves in many different ways, and can possibly serve as models for what works best with this highly vulnerable population.

This study tested five different constructs that have been identified in the literature as important indicators used to identify students at-risk of dropping out, or are
important in school organizations and programs for preventing dropout. They related to
deficit theory of dropout, in which student characteristics should be a good predictor of
graduation rate, and the organizational theory of dropout in which school structures and
processes contribute to dropout. The five constructs tested were: school inputs, school
structures, and the school processes of rigor and relevance in the curriculum, classroom
structures, and social supports. School inputs were those variables that were out the
control of the school, namely the demographics of the students who attend. School
structures may have been controlled by the school, especially in alternative settings, but
not always. School processes are those variables that were controlled by the school, in
that they were determined by choices about curriculum and programs. For this study,
school processes were broken down into three constructs: classroom processes, rigor and
relevance, and student support. School outcomes measured included graduation rate,
average daily attendance rate, percentage of graduates who attended two year college,
and percentage of students who attended four year colleges. The conceptual framework
of the study is illustrated in Figure 2. Using the variables available from the Schools and
Staffing Survey 2003-04 to build these theoretical constructs, this study answered two
questions:

1) Could the constructs of inputs, structures, school processes and outcomes be used to
define public alternative high schools, and if so, what were the statistically significant
predictors of the school type?

2) Did the constructs of school inputs, structures and processes predict outcomes of
public alternative high schools for at-risk students? If so, what were the statistically
significant predictors?
School Outcomes
- Graduation Rate
- Average Daily Attendance
- Percent Attending Two Year College
- Percent Attending Four Year College

Rigorous and Relevant Learning Processes

School Processes

Student Support Programs

Classroom Structures and Processes

School Structures
- Total number of students enrolled
- Calendar exceeds mandatory days
- Year Round School
- For at risk students
- Urbanicity
- Charter School
- Hours of school day
- Temporary Buildings

School Inputs: Student Characteristics
- Percent Racial Minority
- Percent in National School Lunch Program
- Percent LEP
- Percent IEP

Figure 2: Conceptual Framework of Study
Increasingly, the quality of research in education has been called into question. Because of the extreme difficulties and costliness of conducting large-scale randomized, controlled studies in education, they are very rarely done. The educational research community recommends using large-scale data bases to initially identify promising interventions in schools that can then possibly lead to further research using experimental designs (Schneider, et. al., 2007). This study followed that recommended methodology.

This study used data collected by the Schools and Staffing Survey 2003-04 (SASS 03-04) to make statistical comparisons between alternative high schools for at-risk students and traditional high schools. Multiple regressions will be used to determine what school inputs, school structures and school processes, which have been identified by prior research as impacting at-risk students, can be used to predict increased outcomes in alternative high schools for at-risk students.

Instrument

SASS is a set of questionnaires collected approximately every four years. It is administered by the United States Department of Education’s National Center for Education Statistics (NCES) and collected by the United States Census Bureau. SASS is the nation’s largest sample survey of America’s elementary and secondary schools.
investigating five main policy issues: teacher shortage and demand, characteristics of elementary and secondary teachers, teacher workplace conditions, characteristics of school principals, and school programs and policies. It links teachers and principals to their schools and schools to their school districts, with four different questionnaires. The data is representative of public school and school districts, private, charter and BIA (Bureau of Indian Affairs) schools, principals, K-12 teachers, and library media centers at state and national levels, and is affiliation-reliable for private schools, and state-level reliable for public schools, so it can be used to analyze many different policy issues.

This study used data from the 2003-04 SASS Public School Survey. The purpose of the public school questionnaire was to obtain information about public schools such as grades offered, number of students enrolled, staffing patterns, teaching vacancies, high school graduation rates, programs and services offered, and college application rates. The target population included public, public charter and BIA-funded schools with students in any of grades 1-12 or in comparable ungraded levels and in operation in the school year 2003-04. It took the Census Bureau a full school year to collect the data and NCES another year to clean up the data.

Sampling

The sampling frame for the survey was adjusted from the 2001-02 Common Core of Data. It included 87,764 traditional public, 2,309 public charter, and 166 BIA-funded schools (Tourkin, et. al, 2007). SASS did not use a simple random sample. It used different sample rates across different states and different affiliations which lead to different probabilities of selection. Some cases, for example certain minority groups,
were over-sampled. Because of this complex sample design, this researcher used weights for estimation and for calculation of standard errors. The sampling weight was the number of cases in the population that the selected respondent represented. SASS sampling weights also included an adjustment for non-respondents. Without weights, statistics would have been biased, with the over-sampled groups being over-represented. The weights brought cases back to their correct proportions within the population. To obtain a suitable teacher sample, schools were selected with a probability proportionate to the square root of the number of teachers. The SASS sample design also sought to control sample overlap between SASS and other NCES school surveys (NCES, 2008). Table 1 and 2 show the sample size and estimated populations of the 2003-2004 SASS Public School Survey.

Table 1: Sample Size for 2003-2004 SASS Public School Questionnaire

<table>
<thead>
<tr>
<th>Sample Size</th>
<th>All Public Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Size</td>
<td>10,202</td>
</tr>
<tr>
<td>Respondents</td>
<td>8,243 (80.8%)</td>
</tr>
<tr>
<td>Populations</td>
<td>83,725</td>
</tr>
</tbody>
</table>

Table 2: Estimated Populations as Calculated by DAS Online Version 2.0 Using Weighted Sample Size

<table>
<thead>
<tr>
<th>Regular Public High Schools</th>
<th>17,200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alternative Public High Schools</td>
<td>4,800</td>
</tr>
<tr>
<td>Alternative Public High Schools that had 12th graders last year and that specifically serve at-risk students</td>
<td>2,200</td>
</tr>
</tbody>
</table>
The population of high schools that define themselves as alternative and that specifically serve at-risk students was much smaller than the population of all public high schools. In addition, because these schools must have had students in the 12th grade in order to calculate graduation rate, the population was decreased even further.

Data Collection

The U.S. Census Bureau performed the data collection and began by performing an address verification operation in June 2003 and used a variety of methods including initial telephone interviews and computer-assisted personal interviewing to gather initial information. Questionnaire distribution and follow-up for non-responding schools was handled by field representatives. The U.S. Census Bureau also performed the data processing. Each questionnaire was evaluated to determine if it contained sufficient data to be classified as an interview, then to complete the data set SASS used several imputation methods to impute values for questionnaire items that respondents did not answer. SASS also conducted reinterviews about one month after the first questionnaire were collected with about 8 percent of schools to establish a measure of consistency (NCES, 2008).

Variables Used to Build Constructs

The following tables show which variables were chosen from the SASS Public School Survey 2003-04 to develop the School Input, Structure, Process and Outcomes constructed for this study:
Table 3: Student Characteristic Variables Used on the 2003-2004 SASS Public School Survey

<table>
<thead>
<tr>
<th>Question Number and Variable Label</th>
<th>Variable Number or Name</th>
<th>Wording on Survey</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Created Variable: Percentage of students approved for National School Lunch Program</td>
<td>NSLAPP_ S</td>
<td>Of schools that participate in the National School Lunch Program, the percentage of their K-12 enrollment that was approved for free or reduced-price lunches. Calculated as follows: if S0632 = 2 then nslapps = -8</td>
<td>Continuous</td>
</tr>
<tr>
<td>Created Variables Percentage of Students in School of a racial/ethnic minority</td>
<td>MINENR</td>
<td>Percentage of enrolled students who are of a racial/ethnic minority. Calculated as follows: MINENR = round (((NMINST_S/ENRK12UG)*100),.0001);</td>
<td>Continuous</td>
</tr>
<tr>
<td>Created Variable: Percentage of enrolled students who are LEP</td>
<td>LEP</td>
<td>Percentage of students enrolled in the school who were of limited-English-proficiency. Calculated as follows: LEP = ROUND (((S0611/ENRK12UG)*100),.0001); If S0610 = 2 then LEP = 0</td>
<td>Continuous</td>
</tr>
<tr>
<td>Created Variable: Percentage of enrolled students with an IEP</td>
<td>IEP</td>
<td>Percentage of students enrolled in the school who has an Individual Education Plan (IEP). Calculated as follows: IEP = ROUND (((S0604/ENRK12UG)*100),.0001)</td>
<td>Continuous</td>
</tr>
</tbody>
</table>

Table 4: School Structure Variables Used on the 2003-2004 SASS Public School Survey

<table>
<thead>
<tr>
<th>Question Number and Variable Label</th>
<th>Variable Number or Name</th>
<th>Wording on Survey</th>
<th>Category and Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urbanicity of the school</td>
<td>URBANS 03</td>
<td>This is a 3-level collapse of SLOCP_03 (school locale code). Code was assigned using 2000 Decennial Census data.</td>
<td>1= Large or mid-size central city</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2= Urban fringe of a large or mid-size central city</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3= Small town/rural</td>
</tr>
<tr>
<td>Question</td>
<td>Code</td>
<td>Description</td>
<td>Options</td>
</tr>
<tr>
<td>----------</td>
<td>------</td>
<td>-------------</td>
<td>---------</td>
</tr>
<tr>
<td>Q02: Enrollment</td>
<td>S0414</td>
<td>Around the first of October, how many students in grades K-12 and comparable ungraded levels were enrolled in this school?</td>
<td>Continuous</td>
</tr>
<tr>
<td>Q07: School day-hours</td>
<td>S0424</td>
<td>How long is the school day for students in this school? Hours</td>
<td>Continuous</td>
</tr>
<tr>
<td>Q10a: Has temporary buildings</td>
<td>S0430</td>
<td>Does this school have one or more temporary buildings?</td>
<td>0 = No, 1 = Yes</td>
</tr>
<tr>
<td>Q14: School Type</td>
<td>S0441</td>
<td>Which of the following best describes this school:</td>
<td>1 = Regular, 3 = Special program emphasis, 4 = Special education, 5 = Vocational/technical, 6 = Alternative</td>
</tr>
<tr>
<td>Q16: For students at risk</td>
<td>S0443</td>
<td>Is this entire school specifically for students who have been suspended, expelled or who have dropped out, or who have been referred for behavioral or adjustment problems?</td>
<td>0 = No, 1 = Yes</td>
</tr>
<tr>
<td>Q22e Calendar exceeds mandatory days</td>
<td>S0150</td>
<td>Has this school implemented the following: School calendar where the number of days for students exceeds the mandatory days per year</td>
<td>0 = No, 1 = Yes</td>
</tr>
<tr>
<td>Q30a: Year round calendar</td>
<td>S0496</td>
<td>Does this school use a year-round calendar to distribute school days across 12 months?</td>
<td>0 = No, 1 = Yes</td>
</tr>
<tr>
<td>Q31: Has grades 9-12</td>
<td>S0498</td>
<td>Does this school have students in one or more of grades 9-12?</td>
<td>0 = No, 1 = Yes</td>
</tr>
<tr>
<td>Q63: Is it a charter school</td>
<td>S0661</td>
<td>Is this school a public charter school? (A charter school is a public school that, in accordance with an enabling state statute, has been granted a charter exempting it from selected state or local rules and regulations. A charter school may be a newly created school or it may have been a public or private school.)</td>
<td>0 = No, 1 = Yes</td>
</tr>
</tbody>
</table>
Table 5: Classroom Process Variables Used on the 2003-2004 SASS Public School Survey

<table>
<thead>
<tr>
<th>Question Number and Variable Label</th>
<th>Variable Number or Name</th>
<th>Wording on Survey</th>
<th>Category and Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Created Estimated number of students per FTE teacher in the school</td>
<td>STU_TCH</td>
<td>Number of students per full-time equivalent teacher in the school. Calculated as follows: STU_TCH = ROUND((S0092/NUMTCH),01)</td>
<td>Continuous</td>
</tr>
</tbody>
</table>
| Q22a Instructional Approach       | S0462       | Does this school offer: Programs with special instructional approaches (e.g. Montessori, self-paced instruction, open education, ungraded classrooms, etc.) | 0 = No  
1 = Yes               |
| Q27a: Organization-traditional grades | S0489       | THIS school year (2003-04), does this school use traditional grades or academic discipline-based departments to organize classes or student groups? | 0 = No  
1 = Yes               |
| Q27c. Organization keep same teacher | S0491       | THIS school year (2003-04), does this school use student groups that remain two or more years with the same teacher (e.g., looping) to organize classes or student groups? | 0 = No  
1 = Yes               |
| Q27d. Organization Interdisciplinary teaching | S0492       | THIS school year (2003-04), does this school use interdisciplinary teaching (when two or more teachers with different academic specializations collaborate to teach an interdisciplinary program to the same group of students) to organize classes or student groups? | 0 = No  
1 = Yes               |
| Q27e: Organization-team teaching | S0493       | THIS school year (2003-04), does this school use to paired or team teaching is (when two or more teachers, in the same class, at the same time, are jointly responsible for teaching a single group of students) to organize classes or student groups? | 0 = No  
1 = Yes               |
| Q28. Block scheduling             | S0494       | THIS school year (2003-04), are class periods scheduled to create extended blocks of instruction time (block scheduling) at this school? | 0 = No  
1 = Yes               |
Table 6: Rigor and Relevance Process Variables Used on the 2003-2004 SASS Public School Survey

<table>
<thead>
<tr>
<th>Question Number and Variable Label</th>
<th>Variable Number or Name</th>
<th>Wording on Survey</th>
<th>Category and Measurement</th>
</tr>
</thead>
</table>
| Q18a: Admission requirements      | S0447                   | Does this school have any special requirements for admission other than proof of immunization, age, or residence?                                                                                                      | 0 = No  
1 = Yes               |
| Q22b: Program -talented gifted    | S0463                   | Does this school offer the following programs? Talented/Gifted program or honors courses (Designed for students with specifically identified talents or exceptional academic achievement)  | 0 = No  
1 = Yes               |
| Q26a: Summer school activities-    | S0481                   | LAST summer (2003) or LAST school year (2002-03), were summer school activities or academic intercessions provided for students enrolled in this school who sought academic advancement or enrichment? | 0 = No  
1 = Yes               |
| enrichment                        | S0499                   | Are the following opportunities available for students in grades 9-12 in this school? College credits offered through community colleges, colleges, or distance learning providers | 0 = No  
1 = Yes               |
| Q32b. Opportunity-                | S0500                   | Are the following opportunities available for students in grades 9-12 in this school? Work-based learning or internships, in which students earn COURSE CREDITS for supervised learning activities that occur in paid or unpaid workplace assignments | 0 = No  
1 = Yes               |
| work based learning               |                         |                                                                                                                                                                                                                 |                          |
| Q42: Student access to the        | S0595                   | Do most students have access to the Internet through computers located in this school?                                                                                                                        | 0 = No  
1 = Yes               |
<p>| internet                          |                         |                                                                                                                                                                                                                 |                          |</p>
<table>
<thead>
<tr>
<th>Question Number and Variable Label</th>
<th>Variable Number or Name</th>
<th>Wording on Survey</th>
<th>Category and Measurement</th>
</tr>
</thead>
</table>
| Q24a. Programs-                    | S0475                   | Are the following programs or services currently available AT THIS SCHOOL for students in any of grades K-12 or comparable ungraded levels, regardless of funding source? A separate, self-contained program for students with discipline or adjustment problems | 0 = No  
1 = Yes               |
| students discipline problems       |                         |                                                                                                                                                                                                                     |                          |
| Q24b. Programs-                    | S0476                   | Are the following programs or services currently available AT THIS SCHOOL for students in any of grades K-12 or comparable ungraded levels, regardless of funding source? Medical health care services beyond those provided by a school nurse | 0 = No  
1 = Yes               |
| health care                        |                         |                                                                                                                                                                                                                     |                          |
| Q24c. Programs-                    | S0477                   | Are the following programs or services currently available AT THIS SCHOOL for students in any of grades K-12 or comparable ungraded levels, regardless of funding source? Extended day program providing instruction beyond the normal school day for students who need academic assistance? | 0 = No  
1 = Yes               |
| academic assistance                |                         |                                                                                                                                                                                                                     |                          |
| Q25a: Summer school activities-    | S0479                   | LAST summer (2003) or LAST school year (2002-03), were summer school activities or academic intercessions provided for students enrolled in this school who needed academic assistance? | 0 = No  
1 = Yes               |
| assistance                         |                         |                                                                                                                                                                                                                     |                          |
Table 8: School Outcome Variables Used on the 2003-2004 SASS Public School Survey

<table>
<thead>
<tr>
<th>Question Number and Variable Label</th>
<th>Variable Number or Name</th>
<th>Wording on Survey</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q06. Average daily attendance</td>
<td>S0423</td>
<td>For this school year (2003-04), what is the Average Daily Attendance (ADA) at this school?</td>
<td>Continuous</td>
</tr>
<tr>
<td>Q26B Graduation Rate</td>
<td>S0164</td>
<td>Of the number of 12th graders last year, what percentage graduated with a diploma?</td>
<td>Continuous</td>
</tr>
<tr>
<td>Q33c. Percentage to 2 year college</td>
<td>S0506</td>
<td>Of those who graduated with a diploma last year, approximately what percentage went to: Two year colleges?</td>
<td>Continuous</td>
</tr>
<tr>
<td>Q33c: Percentage to 4 year college</td>
<td>S0505</td>
<td>Of those who graduated with a diploma last year, approximately what percentage went to: Four year colleges?</td>
<td>Continuous</td>
</tr>
</tbody>
</table>

Data Analysis

The researcher used the Data Analysis System On-line 2.0 (www.nces.ed.gov/dasol/index.asp) provided by the National Center for Educational Statistics to do the data analysis. The website was used to create data tables and covariance analyses using the 2003-2004 SASS Public School Data File (NCES, 2007). The DAS System provides public access to education survey data collected by the U.S. Department of Education. The DAS analysis system allow researchers to choose the appropriate weight variable for given situations, or as in this case, because there was no particular weight needed for the researcher's analysis, the system automatically applied the appropriate one for the data set. The website also allowed the researcher to filter variables, lump variables, do LOGIT and WLS Regressions, and produce correlation matrices, and organize the data in many different ways.
The On-line DAS system made the complicated data sets produced by NCES more readily available to the public, as well as this researcher. Prior to the development of DAS, most meaningful research using the NCES data sets required a restricted-use contract which was difficult to obtain, and the restricted-use data had to be kept secure at all times. Previously, on the public-use data sets that were available, almost all of the continuous variables were reorganized into categorical variables to prevent any identifying variables from being available to the general public. The DAS system solved the security problem for the NCES because it made more complicated analysis possible, without the researcher having direct contact with the data.

Research Questions

Research Question 1

Could the constructs of inputs, structures, school processes and outcomes be used to define public alternative high schools, and if so, what were the statistically significant predictors of this school type? In order to analyze this question, the researcher used descriptive statistics to describe alternative public high schools and regular public high schools based on the variables that define these constructs. In order to determine the probability that these variables could be used to define alternative public high schools, the researcher conducted logistic regression analysis, using school type as the binary dependent variable with two levels: alternative and regular, and the construct variables as the predictive variables. Logistic regression is a variant of multiple regression in which the predictor variables are both continuous and categorical and the dependent variable is dichotomous.
Research Question 2.1

What constructs of inputs, structures, school processes and outcomes predicted effectiveness of alternative public high schools for at-risk students as measured by the schools' graduation rates? In order to analyze this question, the researcher used multiple regression. The general purpose of multiple regressions is to analyze the relationship between several independent or predictor variables and a dependent or criterion variable. The computational problem that needs to be solved in multiple regression analysis is to fit a straight line (or plane in an n-dimensional space, where n is the number of independent variables) to a number of points. (StatSoft, 2003) For this study, the researcher used Weighted Least Squares (WLS) estimation method to analyze the relationship between the predictor variables that make up the constructs of student characteristics, school structures, classroom processes, rigor and relevance of the curriculum, and student support processes and the dependent outcome variable graduation rate. WLS is the estimation method recommended when variables have mixed scales such as categorical and continuous, as in this case.

Research Question 2.2

What constructs predicted the effectiveness of alternative public high schools that serve at-risk students as measured by the schools’ average daily attendance? In order to investigate this question, the researcher used multiple regression analysis. Similar to research question 2.1, this question examined the relationship between several independent predictor variables and one dependent criterion variable. The predictor variables are those variables that define the constructs of student characteristics, school
structures, classroom processes, rigor and relevance of the curriculum, and student support processes, and the dependent variable was average daily attendance.

Research Question 2.3

What constructs predicted the effectiveness of alternative public high schools that serve at-risk students as measured by the schools' percentage of graduates that attended two year colleges? In order to analyze this question, the researcher again used multiple regression analysis. Similar to research question 2.1 and 2.2, this question examined the relationship between several independent predictor variables and one dependent criterion variable. Again, the predictor variables are those variables that define the constructs of student characteristics, school structures, classroom processes, rigor relevance of the curriculum, and student support processes and the dependent variable was the percentage of graduates that attend two year colleges.

Research Question 2.4

What constructs predicted the effectiveness of public alternative high schools that serve at-risk students as measured by the schools' percentage of graduates that attended four year colleges? The researcher again used multiple regression analysis to analyze this question. The predictor variables will be those variables that define the constructs of student characteristics, school structures, classroom processes, rigor and relevance of the curriculum, and student support processes, and, but for this analysis, the dependent variable is the percentage of graduates that attended four year colleges.
Limitations

There were several limitations to this study. Because the researcher chose to use only school-level data, many teacher level, and school district variables that might have added additional information were not available. This choice was made because although many additional variables were relevant to the constructs, and could be considered important, they were school district level variables, and therefore not necessarily applicable to alternative schools which frequently follow different rules than the rest of the school district. For example all of the variables related to teacher qualifications, graduation requirements, and school safety were school district level data. Similarly, teacher-level data, and individual student level data that might have added more insight into what was happening in classrooms was beyond the scope of this study.

Another important limitation, especially in light of the new recommendations being established for measuring graduation rate by cohort, was that the graduation rates in this study were all calculated by the number of graduates divided by the number of 12th graders that year. This is not the best measure of a school’s long-term effectiveness. Nevertheless, this study provides some important information about alternative public high schools using high quality national-level data. The findings gave insight into the effectiveness of many of the constructs found in the alternative education literature.

Implications

There has long been a need in this country to help students who are disenfranchised from school. In the past, students who did not fit well in high school simply dropped out and went to work. In today’s knowledge based economy, a student
that does not graduate with a high school diploma has life-long earning potential much lower than one with a high school diploma. Our society cannot afford monetarily or morally to let these students fail.

Students who have failed in traditional schools deserve to have a second chance. They also deserve to have quality programming in the schools that they attend. Because alternative schools serve the most disengaged, and voiceless members of society, they frequently not part of rigorous evaluation studies. There are, no doubt, countless program directors, principals, and teachers who are working hard every day to run quality programs in these schools. This study gathered empirical evidence that will help them focus their hard work, and identify the most important characteristics that lead to increased attendance, successful graduation and further training of students at their schools.

The following chapter reveals the interesting results of this study.
CHAPTER IV
RESULTS

The purpose of this study was to add to the body of knowledge about alternative schools by adding quantitative, school-level analysis of some of the ideas found in the literature related to dropout prevention and effective alternative schools. This study tested five different constructs that were identified in the literature as important indicators used to identify students at-risk of dropping out or are important in school organizations and programs for preventing dropout. The five constructs tested were: school inputs, school structures, and the school processes of rigor and relevance in the curriculum, classroom structures, and social supports. The school outcomes that were measured include graduation rate, average daily attendance rate, percentage of graduates who attend two year college, and percentage of graduates who attend four year college.

This chapter assembles the results of analysis of the descriptive statistics, the logistic regressions and the multiple regressions that were done to answer the two research questions. It includes written interpretation of the findings, and uses numerous data tables to display the important quantitative information. The Data Analysis System (DAS Online 2.0) (www.nces.ed.gov/dasol/index.asp) was used to create tables, and conduct covariate analysis using the 2003-2004 SASS Public School Data File (NCES, 2007).
Estimates of School Types

The 2003-2004 SASS Public School Questionnaire allowed schools to categorize themselves into five types: a regular secondary or elementary school; an elementary or secondary school with a special emphasis such as a math and science center, talented and gifted program, performing arts school, language immersion school; a special education school which primarily serves students with disabilities; a vocational/technical school which primarily trains students for occupations; or an alternative school, which is designed to provide alternative or nontraditional education, or falls outside of any of the other categories (NCES, 2003). Table 9 shows the estimates and standard errors of what percentage of all schools fall into each school type. It also displays the estimates and standard errors of the percentage of schools with and without grades 9-12 of each school type. These estimates showed that 6.2% of all schools classified themselves as alternative schools, and 19.2% of schools with grades 9-12 (high schools) classified themselves that way. Table 10 breaks down the estimates for school type differently: it shows the estimated percentage and standard error of the two school types of interest in this study that had and did not have grades 9-12. This analysis estimated that 87.5% of alternative schools had grades 9-12 while only 22.5% of regular schools did. Clearly, a large percentage of alternative schools served high school aged students, while a large percentage of regular schools did not.

The 2003-2004 SASS Public School Questionnaire also allowed schools to classify themselves by whether or not the whole school specifically served at-risk students (those students who had been suspended or expelled, dropped out, or been referred for behavior or adjustment problems). Table 11 shows estimated percentages
and standard errors of schools for at-risk students with grades 9-12 of each school type.
This shows that fully 87% of high schools for at-risk students categorized themselves as
alternative schools. Special education school was the next highest category with 8.3%.

Table 14 contains one more way to look at this data: it has the percentage of
regular and alternative schools with grades 9-12 that classified themselves as for at-risk
students. It indicates that only 0.6% of regular schools with grades 9-12 were specifically
for at-risk students while 50.9% of alternative schools were.

Table 9: Estimated Percentages of Schools with and without Grades 9-12 by School
Type

<table>
<thead>
<tr>
<th>School Type</th>
<th>Regular No grades 9-12 (SE)</th>
<th>Regular Has grades 9-12 (SE)</th>
<th>Special Program Emphasis No grades 9-12 (SE)</th>
<th>Special Program Emphasis Has grades 9-12 (SE)</th>
<th>Special Education No grades 9-12 (SE)</th>
<th>Special Education Has grades 9-12 (SE)</th>
<th>Vocational/Technical No grades 9-12 (SE)</th>
<th>Vocational/Technical Has grades 9-12 (SE)</th>
<th>Alternative No grades 9-12 (SE)</th>
<th>Alternative Has grades 9-12 (SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>86.8%</td>
<td>69.8%</td>
<td>4.7%</td>
<td>4.1%</td>
<td>1.2%</td>
<td>2.9%</td>
<td>1.1%</td>
<td>1.1%</td>
<td>86.8%</td>
<td>69.8%</td>
</tr>
<tr>
<td>With grades 9-12</td>
<td>93.5%</td>
<td>93.5%</td>
<td>4.9%</td>
<td>4.9%</td>
<td>0.6%</td>
<td>0.6%</td>
<td>0%</td>
<td>0%</td>
<td>93.5%</td>
<td>4.9%</td>
</tr>
<tr>
<td>Without grades 9-12</td>
<td>0.52</td>
<td>0.38</td>
<td>0.12</td>
<td>0.38</td>
<td>0.12</td>
<td>0.38</td>
<td>0.01</td>
<td>0.01</td>
<td>0.52</td>
<td>0.38</td>
</tr>
</tbody>
</table>

Table 10: Estimated Percentages of Schools Types with and without Grades 9-12

<table>
<thead>
<tr>
<th>School Type</th>
<th>Estimated % of school type without grades 9-12</th>
<th>Estimated % of school type with grades 9-12</th>
<th>Standard Error for school type without grades 9-12</th>
<th>Standard Error for school type with grades 9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regular</td>
<td>77.5%</td>
<td>22.5%</td>
<td>0.44</td>
<td>0.44</td>
</tr>
<tr>
<td>Alternative</td>
<td>12.5%</td>
<td>87.5%</td>
<td>2.51</td>
<td>2.51</td>
</tr>
</tbody>
</table>
Table 11: Estimated Percentages of Schools for At-Risk Students with Grades 9-12 by School Type

<table>
<thead>
<tr>
<th></th>
<th>Regular</th>
<th>Special Program Emphasis</th>
<th>Special Education</th>
<th>Vocational/Technical</th>
<th>Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>69.8%</td>
<td>4.1%</td>
<td>2.9%</td>
<td>4.0%</td>
<td>19.2%</td>
</tr>
<tr>
<td>Not For Students at Risk with Grades 9-12</td>
<td>78.1%</td>
<td>4.6%</td>
<td>2.2%</td>
<td>4.5%</td>
<td>10.6%</td>
</tr>
<tr>
<td>For Students at Risk With Grades 9-12</td>
<td>3.8%</td>
<td>0.4%</td>
<td>8.3%</td>
<td>0.5%</td>
<td>87%</td>
</tr>
<tr>
<td>Not For Students at Risk (SE)</td>
<td>1.2</td>
<td>0.42</td>
<td>0.33</td>
<td>0.53</td>
<td>0.9</td>
</tr>
<tr>
<td>For Students at Risk (SE)</td>
<td>1.13</td>
<td>0.41</td>
<td>2.07</td>
<td>0.65</td>
<td>2.33</td>
</tr>
</tbody>
</table>

Research Question 1

Data tables 12-23 summarize the results of the descriptive statistics used to answer Research Question 1: Could the constructs of inputs, school structures, school processes and outcomes define public alternative high schools, and if so, what are the statistically significant predictors of this school type? Table 12 shows the means and standard errors of the four continuous variables that define the school input construct of student characteristic for the two school types, regular and alternative high schools. Logistic regression analysis was employed to predict the probability that these inputs/student characteristics could predict that a public high school would be an alternative high school or a regular high school. Assumptions were made regarding the normal distribution of the predictor variables within the two dependent groups. A test of the model showed that it was statistically significant, $R^2=0.19$, Wald $(4, 88)=31.84$, $p<.01$. Table 13 shows the logistic regression coefficient, standard error, odds ratio and Wald test for each of the predictor variables. It shows that using a .001 criterion of statistical significance percentage of students approved for National School Lunch
Program had a highly significant partial effect, meaning that students at public alternative high schools were much more likely to come from poverty and qualify for the free or reduced lunch that is provided at school. Using a .05 criterion for statistical significance, percentage of students of racial or ethnic minority had a partial significant effect, but neither percentage of enrolled students who are LEP (limited English proficiency) or percentage of enrolled students with an IEP (Individualized Education Plan) had a significant effect. The results indicated that students at public alternative high school were more likely to be minorities and more likely to have free-or-reduced-price lunch than their counterparts in regular public schools. Therefore, there appears to be no difference between regular and alternative public high schools in percentage of students that have limited English proficiency or receive special education.

Table 12: Estimated Means of Student Characteristics for Regular and Alternative High Schools

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimated Means for Regular Schools with grades 9-12</th>
<th>Estimated Means for Alternative Schools with grades 9-12</th>
<th>Standard Error for Regular Schools with grades 9-12</th>
<th>Standard Error for Alternative Schools with grades 9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of enrolled students who are LEP</td>
<td>3.4</td>
<td>3.5</td>
<td>.84</td>
<td>.22</td>
</tr>
<tr>
<td>Percentage of enrolled students with an IEP</td>
<td>12.8</td>
<td>19.4</td>
<td>.17</td>
<td>1.53</td>
</tr>
<tr>
<td>Percentage of students approved for National School Lunch Program</td>
<td>36.0</td>
<td>67.6</td>
<td>.60</td>
<td>3.11</td>
</tr>
<tr>
<td>Percentage of students in school of a racial/ethnic minority</td>
<td>26.3</td>
<td>49.0</td>
<td>.73</td>
<td>3.04</td>
</tr>
</tbody>
</table>
Table 13: Logistic Regression Predicting Public Alternative High School from Student Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Odds Ratio</th>
<th>Wald Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of enrolled students who are LEP</td>
<td>-0.110</td>
<td>0.028</td>
<td>0.969</td>
<td>3.411</td>
</tr>
<tr>
<td>Percentage of enrolled students with an IEP</td>
<td>0.014</td>
<td>0.034</td>
<td>1.001</td>
<td>0.100</td>
</tr>
<tr>
<td>Percentage of students approved for National School Lunch Program</td>
<td>0.360</td>
<td>0.048</td>
<td>1.038</td>
<td>74.009***</td>
</tr>
<tr>
<td>Percentage of students in school of a racial/ethnic minority</td>
<td>0.105</td>
<td>0.047</td>
<td>1.007</td>
<td>4.825*</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001

Overall fit: $R^2 = 0.19$, Wald (4, 88) = 31.84, p < .01

The next school input construct that was examined was school structures. There were five dichotomous variables, two continuous variables and one dummy variable that built this construct, as shown in Table 14. Table 14 contains the means or percentages, as well as the standard error for each of these variables for regular and alternative public high schools. Using logistic regression analysis, the school structure construct was examined for its ability to predict the school type as either regular or alternative public high school. The overall fit of the model showed that it was statistically significant at the .001 level and could be used to explain more than half of the variance in the school type, $R^2 = .536$, Wald (8, 81) = 24.043, p < .001. Table 15 shows the logistic regression coefficient, Wald test, and odds ratio for each of the predictors. Four of the variables showed a highly significant partial effect at the .001 probability level: showing that public alternative high schools were much more likely to specifically serve at-risk students, be found in large or midsize central cities, have a shorter school day, and have lower enrollment, than regular public high schools. One of the variables, a year round calendar, predicted school type at the .05 level of significance. The other three variables,
being a charter school, having more than the mandatory number of school days, and having temporary buildings were not significant predictors for the school type.

Table 14: Estimated Means and Percentages of School Structures for Regular and Alternative High Schools

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimated Means or Percentages for Regular Schools with grades 9-12</th>
<th>Estimated Means or Percentages for Alternative Schools with grades 9-12</th>
<th>Standard Error for Regular Schools with grades 9-12</th>
<th>Standard Error for Alternative Schools with grades 9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>For At-Risk Students</td>
<td>0.6%</td>
<td>50.9%</td>
<td>0.18</td>
<td>4.17</td>
</tr>
<tr>
<td>Other than Large or Midsize Central City</td>
<td>86.1%</td>
<td>67.8%</td>
<td>0.74</td>
<td>3.71</td>
</tr>
<tr>
<td>Charter School</td>
<td>2.1%</td>
<td>9.2%</td>
<td>0.27</td>
<td>1.69</td>
</tr>
<tr>
<td>Calendar exceeds mandatory days</td>
<td>25.1%</td>
<td>26.4%</td>
<td>0.89</td>
<td>3.12</td>
</tr>
<tr>
<td>Year round calendar</td>
<td>2.3%</td>
<td>17.5%</td>
<td>0.33</td>
<td>4.33</td>
</tr>
<tr>
<td>Has temporary buildings</td>
<td>26.4%</td>
<td>28.3%</td>
<td>1.23</td>
<td>4.29</td>
</tr>
<tr>
<td>School day in hours</td>
<td>6.4</td>
<td>5.6</td>
<td>0.02</td>
<td>0.13</td>
</tr>
<tr>
<td>Enrollment</td>
<td>813.2</td>
<td>128</td>
<td>16.60</td>
<td>14.50</td>
</tr>
</tbody>
</table>
Table 15: Logistic Regression Predicting Public Alternative High School from School Structures

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE</th>
<th>Odds Ratio</th>
<th>Wald Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>For At-Risk Students</td>
<td>0.485</td>
<td>0.044</td>
<td>14.258</td>
<td>84.822***</td>
</tr>
<tr>
<td>Other than Large or Midsize Central City</td>
<td>-0.116</td>
<td>0.029</td>
<td>.207</td>
<td>21.547***</td>
</tr>
<tr>
<td>Charter School</td>
<td>0.045</td>
<td>0.028</td>
<td>1.077</td>
<td>0.034</td>
</tr>
<tr>
<td>Calendar exceeds mandatory days</td>
<td>-0.016</td>
<td>0.02</td>
<td>.927</td>
<td>0.090</td>
</tr>
<tr>
<td>Year round calendar</td>
<td>0.100</td>
<td>0.060</td>
<td>3.335</td>
<td>4.1938*</td>
</tr>
<tr>
<td>Has temporary buildings</td>
<td>0.023</td>
<td>0.023</td>
<td>1.272</td>
<td>0.793</td>
</tr>
<tr>
<td>School day in hours</td>
<td>-0.207</td>
<td>0.045</td>
<td>.528</td>
<td>29.986***</td>
</tr>
<tr>
<td>Enrollment</td>
<td>-0.212</td>
<td>0.02</td>
<td>.995</td>
<td>31.889***</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001

Overall fit: $R^2 = .536$, Wald (8,81) = 24.043, $p < .001$

Table 16 shows the descriptive statistics and standard errors for regular and alternative public high schools for the seven variables that made up the Classroom Processes Construct. Only the variable estimated number of students per full time equivalent teacher in the school was continuous, while the others were dichotomous.

When logistic regression analysis was done using these variables at the predictors, the model was highly significant, but could be used to explain just 15% of the variance between regular and alternative public high schools: $R^2 = .151$, Wald (7,82) = 14.579, $p < .001$. Table 17 displays the logistic regression coefficient, Wald test, and odds ratio for each of the seven predictors. Two of the construct variables showed significant predictive ability for public alternative high schools at the .001 confidence level: the use of the instructional approach (self-paced, open or ungraded classrooms) was much more
common at alternative public high schools, while the use of traditional grades was much more common at regular public high schools. One variable, team teaching, showed significant predictive ability for the dependent variable at the .01 significance level, illustrating that regular public high schools were more likely to have teachers working together in one classroom. The other five predictor variables, the estimated number of full time equivalent teachers per student, keeping the same teacher, interdisciplinary teaching, and block scheduling in the classroom, were not significant predictors.

Table 16: Estimated Means and Percentages of Classroom Processes for Regular and Alternative High Schools

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimated Means or Percentages for Regular Schools with grades 9-12</th>
<th>Estimated Means or Percentages for Alternative Schools with grades 9-12</th>
<th>Standard Error for Regular Schools with grades 9-12</th>
<th>Standard Error for Alternative Schools with grades 9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated number of students per FTE teacher in the school</td>
<td>15.1</td>
<td>14.5</td>
<td>0.28</td>
<td>0.88</td>
</tr>
<tr>
<td>Instructional Approach (self-paced, open or ungraded classrooms)</td>
<td>22.9%</td>
<td>67.2%</td>
<td>0.93</td>
<td>4.51</td>
</tr>
<tr>
<td>Traditional grades</td>
<td>91.0%</td>
<td>70.9%</td>
<td>0.88</td>
<td>3.63</td>
</tr>
<tr>
<td>Keep the same teacher</td>
<td>12.2%</td>
<td>27.3%</td>
<td>1.00</td>
<td>5.12</td>
</tr>
<tr>
<td>Team teaching</td>
<td>34.2%</td>
<td>28.3%</td>
<td>1.20</td>
<td>4.95</td>
</tr>
<tr>
<td>Interdisciplinary Teaching</td>
<td>31.5%</td>
<td>37.7%</td>
<td>1.02</td>
<td>4.62</td>
</tr>
<tr>
<td>Block Scheduling</td>
<td>40.7%</td>
<td>40.3%</td>
<td>1.24</td>
<td>5.28</td>
</tr>
</tbody>
</table>
Table 17: Logistic Regression Predicting School Type Public Alternative High School from Classroom Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE</th>
<th>Odds Ratio</th>
<th>Wald Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated number of students per FTE teacher in the school</td>
<td>-0.013</td>
<td>0.026</td>
<td>0.993</td>
<td>0.162</td>
</tr>
<tr>
<td>Instructional Approach (self-paced, open or ungraded classrooms)</td>
<td>0.328</td>
<td>0.033</td>
<td>5.72</td>
<td>85.491***</td>
</tr>
<tr>
<td>Traditional Grades</td>
<td>-0.133</td>
<td>0.036</td>
<td>0.42</td>
<td>14.532***</td>
</tr>
<tr>
<td>Keep the same teacher</td>
<td>0.059</td>
<td>0.047</td>
<td>1.521</td>
<td>2.030</td>
</tr>
<tr>
<td>Team teaching</td>
<td>-0.084</td>
<td>0.028</td>
<td>0.569</td>
<td>7.123**</td>
</tr>
<tr>
<td>Interdisciplinary teaching</td>
<td>0.031</td>
<td>0.029</td>
<td>1.222</td>
<td>1.180</td>
</tr>
<tr>
<td>Block Scheduling</td>
<td>-0.013</td>
<td>0.044</td>
<td>0.932</td>
<td>0.059</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall fit: $R^2 = .151$, Wald (7,82) = 14.579, p < .001

The construct of Rigor and Relevance Processes is described in Table 18 by the estimated percentages and standard errors of six different dichotomous variables. The variables were admission requirements (Does this school have any special requirements for admission other than proof of immunization, age, or residence?), talented gifted program (Does this school offer talented/gifted program or honors courses designed for students with specifically identified talents or exceptional academic achievement), summer school enrichment activities (last summer (2003) or last school year (2002-03), were summer school activities or academic intercessions provided for students enrolled in this school who sought academic advancement or enrichment?) opportunity for college credit (Are college credits offered through community colleges, colleges, or distance learning providers?), opportunity for work based learning (Are work based learning or
internships offered, in which students earn course credits for supervised learning activities that occur in paid or unpaid workplace assignments?), and internet access (Do most students have access to the Internet through computers located in this school?)

The results of the logistic regression analysis using these variables as predictor or independent variables, and the school type with two levels, as the dependent variable, revealed a significant overall fit for the model, $R^2 = .361$, Wald $(6,83) = 40.929$, $p < .001$. Together, the Rigor and Relevance variables explained 36% of the variance between alternative public high schools and regular public high schools. The logistic regression coefficient, Wald test, and odds ratio for each of the six predictors are found in Table 16. Two of the predictor variables were significant at the .001 level: alternative public high schools were much more likely to be identified as having admission requirements, and as not having talented and gifted programming. The increased likelihood of alternative public high schools having summer school enrichment programs was significant at the .01 criterion and students' being less likely to have Internet access was significant at the .05 criterion level. The other two Rigor and Relevance Processes variables: the opportunity for work-based learning and the opportunity for students to earn college credit were not significantly more likely to occur in public alternative high schools compared to regular public high schools.
### Table 18: Estimated Means and Percentages of Rigor and Relevance Processes for Regular and Alternative High Schools

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimated Means or Percentages for Regular Schools with grades 9-12</th>
<th>Estimated Mean or Percentages for Alternative Schools with grades 9-12</th>
<th>Standard Error for Regular Schools with grades 9-12</th>
<th>Standard Error for Alternative Schools with grades 9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission Requirements</td>
<td>8.9%</td>
<td>62.6%</td>
<td>0.61</td>
<td>3.6</td>
</tr>
<tr>
<td>talented and gifted program</td>
<td>82.1%</td>
<td>14.7%</td>
<td>0.84</td>
<td>3.05</td>
</tr>
<tr>
<td>summer school enrichment activities</td>
<td>36.1%</td>
<td>44.2%</td>
<td>1.08</td>
<td>3.91</td>
</tr>
<tr>
<td>students have access to the internet</td>
<td>98.7%</td>
<td>90.1%</td>
<td>0.29</td>
<td>2.31</td>
</tr>
<tr>
<td>opportunity for work based learning</td>
<td>72.8%</td>
<td>54.9%</td>
<td>1.06</td>
<td>4.32</td>
</tr>
<tr>
<td>opportunity to earn college credit</td>
<td>84.5%</td>
<td>47.3%</td>
<td>0.97</td>
<td>5.55</td>
</tr>
</tbody>
</table>

### Table 19: Logistic Regression Predicting Public Alternative High School from Rigor and Relevance Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Odds Ratio</th>
<th>Wald Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>admission requirements</td>
<td>0.291</td>
<td>0.037</td>
<td>5.561</td>
<td>61.901***</td>
</tr>
<tr>
<td>talented and gifted program</td>
<td>-0.349</td>
<td>0.046</td>
<td>0.095</td>
<td>74.223***</td>
</tr>
<tr>
<td>students have access to the internet</td>
<td>-0.079</td>
<td>0.030</td>
<td>0.364</td>
<td>6.036*</td>
</tr>
<tr>
<td>summer school enrichment activities</td>
<td>0.085</td>
<td>0.027</td>
<td>1.995</td>
<td>8.739**</td>
</tr>
<tr>
<td>opportunity for work based learning</td>
<td>-0.038</td>
<td>0.038</td>
<td>0.692</td>
<td>1.251</td>
</tr>
<tr>
<td>opportunity to earn college credit</td>
<td>-0.082</td>
<td>0.038</td>
<td>0.630</td>
<td>2.472</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall fit: $R^2 = .361, \text{Wald (6,83)} = 40.929, p < .001$
The next school process construct that was examined was Student Support. There
were four dichotomous variables that built this construct, student discipline programs (a
separate, self-contained program for students with discipline or adjustment problems),
health care programs (medical health care services beyond those provided by a school
nurse), and academic assistance programs (extended day program providing instruction
beyond the normal school day for students who need academic assistance), and summer
school assistance programs (summer school activities or academic intercessions provided
for students enrolled in this school who needed academic assistance) as shown in Table
20. Table 20 contains the estimated percentages as well as the standard error for each of
these variables for regular and alternative public high schools. Using these variables as
predictor/independent variables of the dependent variable school type, logistic regression
analysis revealed that the overall fit of the model was not statistically significant, and did
not explain any of the variance of alternative public high schools, $R^2 = .007$, Wald (4, 85)
= 1.704, $p = .157$, nor were any of the predictors statistically significant on their own.
Table 21 contains the logistic regression coefficient, Wald test, and odds ratio for each of
the four predictors.
Table 20: Estimated Means and Percentages of Student Support Processes for Regular and Alternative High Schools

<table>
<thead>
<tr>
<th>Variable</th>
<th>Estimated Means or Percentages for Regular Schools with grades 9-12</th>
<th>Estimated Means or Percentages for Alternative Schools with grades 9-12</th>
<th>Standard Error for Regular Schools with grades 9-12</th>
<th>Standard Error for Alternative Schools with grades 9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Discipline Program</td>
<td>42.9%</td>
<td>47.8%</td>
<td>1.23</td>
<td>5.41</td>
</tr>
<tr>
<td>Health Care Program</td>
<td>11.5%</td>
<td>15.7%</td>
<td>.71</td>
<td>2.22</td>
</tr>
<tr>
<td>Academic Assistance Program</td>
<td>43.0%</td>
<td>33.8%</td>
<td>1.30</td>
<td>4.31</td>
</tr>
<tr>
<td>Summer school assistance</td>
<td>72.1%</td>
<td>67.4%</td>
<td>1.09</td>
<td>3.97</td>
</tr>
</tbody>
</table>

Table 21: Logistic Regression Predicting Public Alternative High School from Student Support Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Odds Ratio</th>
<th>Wald Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Discipline Program</td>
<td>0.044</td>
<td>0.042</td>
<td>1.255</td>
<td>1.082</td>
</tr>
<tr>
<td>Health Care Program</td>
<td>0.034</td>
<td>0.028</td>
<td>1.280</td>
<td>1.532</td>
</tr>
<tr>
<td>Academic Assistance Program</td>
<td>-0.064</td>
<td>0.034</td>
<td>0.712</td>
<td>2.898</td>
</tr>
<tr>
<td>Summer school assistance</td>
<td>-0.021</td>
<td>0.033</td>
<td>0.895</td>
<td>0.362</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall fit: $R^2 = .007$, Wald (4, 85) = 1.704, $p = .157$

Table 22 contains the estimated means and standard error of the four continuous school outcome variables for regular and alternative public high schools: percentage of 12th graders that graduated last year, percentage of graduates who attended a two year college, percentage of graduates who attended a four year college, and the average daily attendance for the school year. Conducting logistic regression analysis identified the school outcomes construct as a highly significant model, $R^2 = 0.374$, Wald (4, 85) =
45.406, p < .001, that can predict 37% of the variance of public alternative high schools type compared to regular high schools type. Table 23 includes the logistic regression coefficient, Wald test, and odds ratio for each of the four predictor variables. Three variables, percent graduated, percent to four year college, and average daily attendance were significant at the .001 level, showing that public alternative high schools were much more likely to have lower numbers for all of these variables. One predictor, attendance at two year college, did not reveal a significant predictive effect for school type.

Table 22: Estimated Means of School Outcomes for Regular and Alternative High Schools

<table>
<thead>
<tr>
<th></th>
<th>Estimated Percentages for Regular Schools with grades 9-12</th>
<th>Estimated Percentages for Alternative Schools with grades 9-12</th>
<th>Standard Error for Regular Schools with grades 9-12</th>
<th>Standard Error for Alternative Schools with grades 9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage graduated last year</td>
<td>93.6</td>
<td>61.0</td>
<td>.25</td>
<td>3.59</td>
</tr>
<tr>
<td>Average Daily Attendance</td>
<td>92.3</td>
<td>79.9</td>
<td>.25</td>
<td>3.05</td>
</tr>
<tr>
<td>Percentage to 2year college</td>
<td>27.6</td>
<td>21.6</td>
<td>.46</td>
<td>2.17</td>
</tr>
<tr>
<td>Percentage to 4year college</td>
<td>41.7</td>
<td>8.7</td>
<td>.54</td>
<td>1.18</td>
</tr>
</tbody>
</table>

Table 23: Logistic Regression Predicting Public Alternative High School from School Outcomes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>Odds Ratio</th>
<th>Wald Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage graduated last year</td>
<td>-0.234</td>
<td>0.058</td>
<td>0.986</td>
<td>9.481***</td>
</tr>
<tr>
<td>Average Daily Attendance</td>
<td>-0.181</td>
<td>0.045</td>
<td>0.971</td>
<td>29.304***</td>
</tr>
<tr>
<td>Percentage to 2year college</td>
<td>-0.107</td>
<td>0.039</td>
<td>0.993</td>
<td>2.019</td>
</tr>
<tr>
<td>Percentage to 4year college</td>
<td>-0.353</td>
<td>0.042</td>
<td>0.934</td>
<td>59.112***</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall fit: R² = 0.374, Wald (4, 85) = 45.406, p < .001
Using the results from the previous logistic regression analyses, one final analysis was done using variables that had the largest standardized beta coefficients from all of the different constructs. The purpose of this analysis was to see if one overriding model could be created that would explain a large percentage of the variance between alternative public high schools and regular public high schools. The analysis of this model which included the variables percentage of students approved for National School Lunch Program, urbanicity, enrollment, hours in the schools' day, for students at risk, instructional approach (self-paced, open or ungraded classrooms), admissions requirements, percentage graduated last year, and percentage to four year colleges, average daily attendance, showed highly significant fit, $R^2 = 0.670$, Wald (10, 79) = 27.529, $p < .001$. All of the variables made a significant contribution to predictability of this model at least of the .05 confidence level, with the exception of instructional approach, and percentage to four year college. The standardized beta coefficient, standard error, odds ratio and Wald F Statistic for these variables are shown in Table 24. Overall the model can be used to predict two thirds of the variance associated with the school type.
Table 24: Best Model Logistic Regression Predicting Public Alternative High School Using Variables from All Constructs

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE</th>
<th>Odds Ratio</th>
<th>Wald Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of students approved for NSLP</td>
<td>0.054</td>
<td>0.033</td>
<td>0.967</td>
<td>4.109*</td>
</tr>
<tr>
<td>Other than large or mid-size central city</td>
<td>-0.052</td>
<td>0.031</td>
<td>1.015</td>
<td>6.422*</td>
</tr>
<tr>
<td>Enrollment</td>
<td>-0.104</td>
<td>0.017</td>
<td>662.442</td>
<td>8.217**</td>
</tr>
<tr>
<td>School day-hours</td>
<td>-0.143</td>
<td>0.034</td>
<td>0.998</td>
<td>17.473***</td>
</tr>
<tr>
<td>For students at risk</td>
<td>0.383</td>
<td>0.06</td>
<td>0.491</td>
<td>26.482***</td>
</tr>
<tr>
<td>Instructional Approach (self-paced, open or ungraded classrooms)</td>
<td>0.068</td>
<td>0.022</td>
<td>10.602</td>
<td>2.535</td>
</tr>
<tr>
<td>Admission requirements</td>
<td>0.149</td>
<td>0.035</td>
<td>1.698</td>
<td>21.984***</td>
</tr>
<tr>
<td>Percentage graduated last year</td>
<td>-0.147</td>
<td>0.052</td>
<td>4.111</td>
<td>5.112*</td>
</tr>
<tr>
<td>Percentage to 4year college</td>
<td>-0.079</td>
<td>0.023</td>
<td>0.987</td>
<td>2.081</td>
</tr>
<tr>
<td>Average daily attendance</td>
<td>-0.151</td>
<td>0.086</td>
<td>0.986</td>
<td>9.645**</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall fit: $R^2 = 0.670$, Wald (10, 79) = 27.529, $p < .001$

Research Question 2.1

Tables 25 through 29 show the results of the analysis of Research Question 2.1:

What constructs predicted the effectiveness of alternative public high schools for at-risk students as measured by the schools’ graduation rates? Table 25 shows the results of the standard multiple regression analysis of the construct student characteristics which contains four continuous predictor/independent variables and graduation rate as the dependent continuous variable. In all of the analysis done for research question 2, only alternative public high schools that specifically served at-risk students were included,
which made the sample size smaller and the standard errors larger. The overall fit for the model was not significant, $R^2 = 0.190$, $F(4, 85) = 1.130$, $p = 0.348$, and none of the student characteristic variables were significant predictors of graduation rate. Table 25 contains the unstandardized regressions coefficient ($B$), standard error, standardized regression coefficient ($B$), and observed $t$ values for all of the predictor variables: percentage of enrolled students with an Individualized Education Plan, percentage of enrolled students with Limited English language Proficiency, percentage of students in school of a racial/ethnic minority, and percentage of students approved for National School Lunch Program.

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE</th>
<th>$B$</th>
<th>$t$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of enrolled students with an IEP</td>
<td>-0.0198</td>
<td>0.261</td>
<td>-0.119</td>
<td>-0.759</td>
</tr>
<tr>
<td>Percentage of enrolled students who are LEP</td>
<td>2.006</td>
<td>1.435</td>
<td>0.384</td>
<td>1.398</td>
</tr>
<tr>
<td>Percentage of students in school of a racial/ethnic minority</td>
<td>0.045</td>
<td>0.244</td>
<td>0.034</td>
<td>0.174</td>
</tr>
<tr>
<td>Percentage of students approved for National School Lunch Program</td>
<td>-0.224</td>
<td>0.244</td>
<td>-0.137</td>
<td>-0.917</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01, ***p < .001 Overall model: $R^2 = 0.190$, $F(4, 85) = 1.130$, $p = 0.348$

The next construct that was analyzed to answer Research Question 2.1 was School Structures. This construct was decreased to five predictor variables because the variables of charter school, and year round school were not found in adequate numbers in public alternative high schools for at-risk students to analyze. Three of the predictor variables were dichotomous: the school was somewhere other than a large or midsize central city (urbanicity), the school calendar exceeded mandatory days, the school had temporary buildings, and two are continuous: length of the school in hours, and
enrollment. The standard multiple regression analysis revealed no significant ability of the School Structure variables to predict the dependent variable graduation rate at public alternative high schools for at-risk students, $R^2 = 0.043$, $F (5, 84) = 0.431$, $p = 0.825$.

Table 26 contains the unstandardized regressions coefficient (B), standard error, standardized regression coefficient ($B$), and observed t values for all of the predictor variables, none of which had significant predictive ability for the school outcome graduation rate.

Table 26: Multiple Regression Predicting Graduation Rate at Public Alternative High Schools for At-Risk Students from School Structures

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>$B$</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other than Large or Midsize</td>
<td>-1.713</td>
<td>12.368</td>
<td>-0.020</td>
<td>-0.139</td>
</tr>
<tr>
<td>Central City</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calendar exceeds mandatory days</td>
<td>-15.019</td>
<td>12.621</td>
<td>-0.166</td>
<td>-1.190</td>
</tr>
<tr>
<td>Has temporary buildings</td>
<td>9.232</td>
<td>15.605</td>
<td>0.112</td>
<td>0.592</td>
</tr>
<tr>
<td>School day in hours</td>
<td>-1.255</td>
<td>4.614</td>
<td>-0.036</td>
<td>-0.272</td>
</tr>
<tr>
<td>Enrollment</td>
<td>-0.006</td>
<td>0.046</td>
<td>-0.012</td>
<td>-0.012</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall model: $R^2 = 0.043$, $F (5, 84) = 0.431$, $p = 0.825$

The next construct that was analyzed to answer Research Question 2.1 was Classroom Processes. The standard multiple regression analysis, using the seven classroom variables as predictor variables, and graduation rate as the continuous dependent variable, revealed a significant overall fit for the model, $R^2 = 0.336$, $F (7, 82) = 7.375$, $p < .001$. Table 27 contains the unstandardized regressions coefficient (B), standard error, standardized regression coefficient ($B$), and observed t values for all of the predictor variables. Four of the predictor variables: instructional approach, keeping the same teacher, interdisciplinary teaching, and block scheduling, had predictive ability at
the .05 confidence level. All of the variables were positive predictors except self-paced instructional approach which is a negative predictor of graduation rate. Together, the model explained 34% of the variance of graduation rate at public alternative high schools for at-risk students, showing the classroom processes was potentially very important for increased effectiveness at these schools.

Table 27: Multiple Regression Predicting Graduation Rate at Public Alternative High Schools for At-Risk Students from Classroom Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated number of students per FTE teacher in the school</td>
<td>0.741</td>
<td>0.715</td>
<td>0.157</td>
<td>1.037</td>
</tr>
<tr>
<td>Instructional Approach (self-paced, open or ungraded classrooms)</td>
<td>-17.107</td>
<td>8.237</td>
<td>-0.192</td>
<td>-2.077*</td>
</tr>
<tr>
<td>Traditional grades</td>
<td>-8.937</td>
<td>7.876</td>
<td>-0.100</td>
<td>-1.135</td>
</tr>
<tr>
<td>Keep the same teacher</td>
<td>23.370</td>
<td>11.462</td>
<td>0.268</td>
<td>2.039*</td>
</tr>
<tr>
<td>Team teaching</td>
<td>4.237</td>
<td>11.354</td>
<td>0.049</td>
<td>0.373</td>
</tr>
<tr>
<td>Interdisciplinary Teaching</td>
<td>24.502</td>
<td>10.749</td>
<td>0.299</td>
<td>2.279*</td>
</tr>
<tr>
<td>Block Scheduling</td>
<td>20.036</td>
<td>7.739</td>
<td>0.237</td>
<td>2.589*</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall model: \( R^2 = 0.336, F (7, 82) = 7.375, p < .001***

Standard Multiple Regression Analysis was also done using the Rigor and Relevance Processes construct variables as predictors of graduation rate at public alternative high schools for at-risk students. Table 28 shows the unstandardized regressions coefficient (B), standard error, standardized regression coefficient (\( B \)), and observed \( t \) values for all of the predictor variables. Two variables, talented and gifted programming, students having Internet access, were not included in this analysis because the sample size was below what was required. The overall fit of the Rigor and Relevance Process model was not significant, \( R^2 = 0.045, F (4, 85) = 1.249, p = .301, \) and none of
the four predictor variables: admission requirements, summer school enrichment activities, opportunity for work based learning, opportunity to earn college credit, were significant predictors for graduation rate at public alternative high schools for at-risk students.

Table 28: Multiple Regression Predicting Graduation Rate at Public Alternative High Schools for At-Risk Students from Rigor and Relevance Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission Requirements</td>
<td>14.307</td>
<td>12.673</td>
<td>0.155</td>
<td>1.121</td>
</tr>
<tr>
<td>Summer school enrichment activities</td>
<td>-4.430</td>
<td>15.16</td>
<td>-0.054</td>
<td>-0.292</td>
</tr>
<tr>
<td>Opportunity for work based learning</td>
<td>7.215</td>
<td>12.952</td>
<td>0.152</td>
<td>0.557</td>
</tr>
<tr>
<td>Opportunity to earn college credit</td>
<td>6.946</td>
<td>12.474</td>
<td>0.081</td>
<td>0.557</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001  Overall model: $R^2 = 0.045$, F (4, 85) = 1.249, p = .301

The final construct that was analyzed for its predictive ability for the dependent variable of graduation rate at public alternative high schools for at-risk students, was the Student Support Processes construct. Four variables made up this construct, as described under Research Question 1. Table 29 contains the unstandardized regressions coefficient (B), standard error, standardized regression coefficient ($B$), and observed t values for all of the predictor variables. None of the variables student discipline program, health care program, academic assistance program, and summer school assistance had a significant effect on graduation rate at public alternative high schools for at-risk students. The overall fit of the model was not significant, $R^2 = 0.064$, F (4, 85) = 0.702, p = 0.592, indicating that Student Support Processes were not an important part of the variance of this dependent variable.
Table 29: Multiple Regression Predicting Graduation Rate at Public Alternative High Schools for At-Risk Students from Student Support Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Discipline Program</td>
<td>-10.634</td>
<td>13.480</td>
<td>-0.130</td>
<td>-0.789</td>
</tr>
<tr>
<td>Health Care Program</td>
<td>-0.811</td>
<td>13.224</td>
<td>-0.008</td>
<td>-0.061</td>
</tr>
<tr>
<td>Academic Assistance Program</td>
<td>20.109</td>
<td>17.008</td>
<td>0.239</td>
<td>1.182</td>
</tr>
<tr>
<td>Summer School Assistance</td>
<td>-5.655</td>
<td>10.098</td>
<td>-0.061</td>
<td>-0.560</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall model: $R^2 = 0.064$, $F (4, 85) = 0.702$, $p = 0.592$

Research Question 2.2

Data Tables 30-34 contain the results of the analysis of Research Question 2.2:

What constructs predicted the effectiveness of alternative public high schools that served at-risk students as measured by the schools’ average daily attendance? Table 30 shows the results of the standard multiple regression analysis of the construct student characteristics which contains four continuous predictor/independent variables and average daily attendance as the dependent continuous variable. Again, in all of the analysis done for research question 2.2, only alternative public high schools that specifically served at-risk students were included, which made the sample size smaller and the standard errors larger. The overall fit for the model was not significant, $R^2 = 0.115 (4, 85) = 1.937$, $p = 0.112$, and none of the student characteristic variables were significant predictors of average daily attendance. Table 26 contains the unstandardized regressions coefficient (B), standard error, standardized regression coefficient ($B$), and observed t values for all of the predictor variables.
Table 30: Multiple Regression Predicting Average Daily Attendance at Public Alternative High Schools for At-Risk Students from Student Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of enrolled students with an IEP</td>
<td>0.180</td>
<td>0.069</td>
<td>0.264</td>
<td>2.611</td>
</tr>
<tr>
<td>Percentage of enrolled students who are LEP</td>
<td>-0.164</td>
<td>0.715</td>
<td>-0.074</td>
<td>-0.229</td>
</tr>
<tr>
<td>Percentage of students in school of a racial/ethnic minority</td>
<td>-0.047</td>
<td>0.071</td>
<td>-0.087</td>
<td>-0.664</td>
</tr>
<tr>
<td>Percentage of students approved for National School Lunch Program</td>
<td>-0.063</td>
<td>0.126</td>
<td>-0.095</td>
<td>0.179</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001

Overall model: $R^2 = 0.115$ (4, 85) = 1.937, $p = 0.112$

The next construct that was analyzed to answer Research Question 2.2 was School Structures. Again, this construct had five predictor variables: three were dichotomous: the school was somewhere other than a large or midsize central city (urbanicity), the school calendar exceeded mandatory days, the school had temporary buildings, and two were continuous: length of the school in hours, and enrollment. The standard multiple regression analysis revealed no significant ability of the School Structure variables to predict the dependent variable average daily attendance at public alternative high schools for at-risk students, $R^2 = 0.087$, $F (5, 84) = 1.311$, $p = 0.267$

Table 31 contains the unstandardized regressions coefficient (B), standard error, standardized regression coefficient ($B$), and observed t values for all of the predictor variables, none of which had significant predictive ability for the school outcome Average Daily Attendance.
Table 31: Multiple Regression Predicting Average Daily Attendance at Public Alternative High Schools for At-Risk Students from School Structures

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>$B$</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other than large or midsize central city</td>
<td>5.293</td>
<td>5.718</td>
<td>0.129</td>
<td>0.926</td>
</tr>
<tr>
<td>Calendar exceeds mandatory days</td>
<td>-2.965</td>
<td>5.711</td>
<td>-0.068</td>
<td>-0.519</td>
</tr>
<tr>
<td>Has temporary buildings</td>
<td>-7.477</td>
<td>7.424</td>
<td>-0.188</td>
<td>-1.007</td>
</tr>
<tr>
<td>School day in hours</td>
<td>2.403</td>
<td>1.214</td>
<td>0.144</td>
<td>-1.007</td>
</tr>
<tr>
<td>Enrollment</td>
<td>0.031</td>
<td>0.022</td>
<td>0.139</td>
<td>1.395</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001  Overall model: $R^2 = 0.087, F (5, 84) = 1.311, p = 0.267$

The next construct that was analyzed to answer Research Question 2.2 - What constructs predicted effectiveness of alternative public high schools for at-risk students as measured by the schools’ average daily attendance? - was Classroom Processes. The standard multiple regression analysis, using the seven classroom variables as predictor variables, and average daily attendance as the continuous dependent variable, revealed an overall fit for the model, $R^2 = 0.132, F (7, 82) = 1.331, p = .246$, which was not significant. However, the continuous variable of number of students per FTE teacher did have significant predictive ability at the .05 confidence level, showing that students’ attendance is better in smaller classroom sizes. The rest of the dichotomous variables, instructional approach, traditional grades, keeping the same teacher, team teaching, interdisciplinary teaching, and block scheduling had no significant ability to predict average daily attendance. Table 32 contains the unstandardized regressions coefficient (B), standard error, standardized regression coefficient ($B$), and observed t values for all of the predictor variables.
Table 32: Multiple Regression Predicting Average Daily Attendance at Public Alternative High Schools for At-Risk Students from Classroom Structures and Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated number of students per FTE teacher in the school</td>
<td>-0.698</td>
<td>0.348</td>
<td>-0.313</td>
<td>-2.007*</td>
</tr>
<tr>
<td>Instructional Approach (self-paced, open or ungraded classrooms)</td>
<td>-1.912</td>
<td>4.905</td>
<td>-0.045</td>
<td>-0.390</td>
</tr>
<tr>
<td>Traditional grades</td>
<td>-2.040</td>
<td>5.587</td>
<td>-0.048</td>
<td>-0.365</td>
</tr>
<tr>
<td>Keep the same teacher</td>
<td>-1.263</td>
<td>5.731</td>
<td>-0.030</td>
<td>-0.220</td>
</tr>
<tr>
<td>Team teaching</td>
<td>0.662</td>
<td>4.64</td>
<td>0.016</td>
<td>0.143</td>
</tr>
<tr>
<td>Interdisciplinary Teaching</td>
<td>2.613</td>
<td>3.603</td>
<td>0.067</td>
<td>0.725</td>
</tr>
<tr>
<td>Block Scheduling</td>
<td>5.022</td>
<td>3.608</td>
<td>0.125</td>
<td>1.392</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall model: $R^2 = 0.132$, $F (7, 82) = 1.331$, p = .246

Standard Multiple Regression Analysis was also done using the Rigor and Relevance Processes construct variables as predictors of average daily attendance at public alternative high schools for at-risk students. Table 33 shows the unstandardized regressions coefficient (B), standard error, standardized regression coefficient (B), and observed t values for all of the predictor variables. The overall fit of the Rigor and Relevance Process model was not significant, $R^2 = 0.023$, $F (4, 85) = 1.012$, p = 0.406, and none of the four predictor variables, admission requirements, summer school enrichment activities, opportunity for work based learning, opportunity to earn college credit, were significant predictors for average daily attendance at public alternative high schools for at-risk students.
Table 33: Multiple Regression Predicting Average Daily Attendance at Public Alternative High Schools for At-Risk Students from Rigor and Relevance Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission Requirements</td>
<td>1.467</td>
<td>5.389</td>
<td>0.034</td>
<td>0.272</td>
</tr>
<tr>
<td>Summer school enrichment activities</td>
<td>4.397</td>
<td>4.610</td>
<td>0.113</td>
<td>0.954</td>
</tr>
<tr>
<td>Opportunity for work based learning</td>
<td>-0.812</td>
<td>4.837</td>
<td>-0.021</td>
<td>-0.168</td>
</tr>
<tr>
<td>Opportunity to earn college credit</td>
<td>3.158</td>
<td>3.986</td>
<td>0.077</td>
<td>0.792</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001  Overall model: $R^2 = 0.023, F (4, 85) = 1.012, p = 0.406$

The final construct that was analyzed for its predictive ability for the dependent variable of Average Daily Attendance at Public Alternative High Schools for At-Risk Students, was the Student Support Construct. Four dichotomous variables made up this construct. Table 34 contains the unstandardized regressions coefficient (B), standard error, standardized regression coefficient ($B$), and observed t values for all of the predictor variables. The overall fit of the model was $R^2 = 0.128, F (4, 85) = 2.903, p = 0.026$, significant at .05 confidence level, indicating that Student Support Processes could explain about 13% of the variance of the Average Daily Attendance at Public Alternative Schools for At-Risk Students. None of the variables Student Discipline Program, Academic Assistance Program, and Summer School Assistance had a significant effect on the dependent variable, but the variable Health Care Programs was significant at the .05 level, showing that Health Care Programs may be an important variable in encouraging students’ daily attendance at Public Alternative High Schools for At-Risk Students.
Table 34: Multiple Regression Predicting Average Daily Attendance at Public Alternative High Schools for At-Risk Students from Student Support Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Discipline Program</td>
<td>-7.346</td>
<td>3.938</td>
<td>-0.186</td>
<td>-1.865</td>
</tr>
<tr>
<td>Health Care Program</td>
<td>11.801</td>
<td>5.166</td>
<td>0.249</td>
<td>2.284*</td>
</tr>
<tr>
<td>Academic Assistance Program</td>
<td>-8.479</td>
<td>4.975</td>
<td>-0.207</td>
<td>-1.704</td>
</tr>
<tr>
<td>Summer School Assistance</td>
<td>-1.464</td>
<td>3.283</td>
<td>-0.033</td>
<td>-0.446</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001  Overall model: $R^2 = 0.128$, $F (4, 85) = 2.903$, $p = 0.026^*$

Research Question 2.3

Data Tables 35-39 contain the results of the analysis of Research Question 2.3:

What constructs predicted the success of alternative public high schools that serve at-risk students as measured by the schools' percentage of graduates that attended two year colleges? Table 35 shows the results of the standard multiple regression analysis of the construct student characteristics which contains four continuous predictor/independent variables and attendance at two year college as the dependent continuous variable. The overall fit for the model was not significant, $R^2 = 0.138$, $F (4, 85) = 1.448$, $p = 0.225$, and none of the student characteristic variables were significant predictors of attendance at two-year college. Table 35 contains the unstandardized regressions coefficient (B), standard error, standardized regression coefficient (B), and observed t values for all of the predictor variables: percentage of enrolled students with an Individualized Education Plan, percentage of enrolled students with Limited English language Proficiency, percentage of students in school of a racial/ethnic minority, and percentage of students approved for National School Lunch Program.
Table 35: Multiple Regression Predicting Attendance at Two Year College at Public Alternative High Schools for At-Risk Students from Student Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of enrolled students with an IEP</td>
<td>-0.058</td>
<td>0.119</td>
<td>-0.063</td>
<td>-0.487</td>
</tr>
<tr>
<td>Percentage of enrolled students who are LEP</td>
<td>-0.268</td>
<td>0.614</td>
<td>-0.093</td>
<td>-0.437</td>
</tr>
<tr>
<td>Percentage of students in school of a racial/ethnic minority</td>
<td>-0.202</td>
<td>0.118</td>
<td>-0.283</td>
<td>-1.705</td>
</tr>
<tr>
<td>Percentage of students approved for National School Lunch Program</td>
<td>-0.042</td>
<td>0.117</td>
<td>-0.046</td>
<td>-0.355</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001  Overall model: $R^2 = 0.138, F (4, 85) = 1.448, p = 0.225$

The next construct that was analyzed to answer Research Question 2.3 was school structures. The standard multiple regression analysis revealed no significant ability of the school structure variables to predict the dependent variable attendance at two year college at public alternative high schools for at-risk students, $R^2 = 0.071, F (5, 84) = 0.712, p = 0.616$. Table 36 contains the unstandardized regressions coefficient ($B$), standard error, standardized regression coefficient ($B$), and observed t values for all of the predictor variables, none of which had significant predictive ability for the school outcome attendance at two year college.

Table 36: Multiple Regression Predicting Attendance at Two Year College at Public Alternative High Schools for At-Risk Students from School Structures

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other than large or midsize central city</td>
<td>-9.542</td>
<td>6.899</td>
<td>-0.198</td>
<td>-1.383</td>
</tr>
<tr>
<td>Calendar exceeds mandatory days</td>
<td>-4.272</td>
<td>5.832</td>
<td>-0.085</td>
<td>-0.733</td>
</tr>
<tr>
<td>Has temporary buildings</td>
<td>-6.584</td>
<td>5.776</td>
<td>-0.143</td>
<td>-1.140</td>
</tr>
<tr>
<td>School day in hours</td>
<td>-1.118</td>
<td>2.642</td>
<td>-0.058</td>
<td>-0.423</td>
</tr>
<tr>
<td>Enrollment</td>
<td>0.010</td>
<td>2.642</td>
<td>-0.058</td>
<td>-0.423</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001  Overall model: $R^2 = 0.071, F (5, 84) = 0.712, p = 0.616.$
The next construct that was analyzed to answer Research Question 2.3 - What constructs predict effectiveness of alternative public high schools for at-risk students as measured by the schools' percentage of graduates that attends two year colleges - was Classroom Processes. The standard multiple regression analysis, using the seven classroom variables as predictor variables, and attendance at two year college as the continuous dependent variable, revealed an overall fit for the model, $R^2 = 0.093$, $F(7, 82) = 0.764$, $p = .619$, which was not significant. None of the predictor variables, either the continuous variable of number of students per FTE teacher, or the dichotomous variables, instructional approach, traditional grades, keeping the same teacher, team teaching, interdisciplinary teaching, and block scheduling had any significant ability to predict attendance at two-year college. Table 37 contains the unstandardized regressions coefficient ($B$), standard error, standardized regression coefficient ($B$), and observed $t$ values for all of the predictor variables.

Table 37: Multiple Regression Predicting Attendance at Two Year College at Public Alternative High Schools for At-Risk Students from Classroom Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>$B$</th>
<th>$t$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated number of students per FTE teacher in the school</td>
<td>-0.357</td>
<td>0.382</td>
<td>-0.135</td>
<td>-0.934</td>
</tr>
<tr>
<td>Instructional Approach (self-paced, open or ungraded classrooms)</td>
<td>2.170</td>
<td>6.061</td>
<td>0.044</td>
<td>0.358</td>
</tr>
<tr>
<td>Traditional grades</td>
<td>-5.507</td>
<td>5.899</td>
<td>-0.110</td>
<td>-0.934</td>
</tr>
<tr>
<td>Keep the same teacher</td>
<td>-2.625</td>
<td>6.440</td>
<td>-0.054</td>
<td>-0.408</td>
</tr>
<tr>
<td>Team teaching</td>
<td>-2.696</td>
<td>7.130</td>
<td>-0.056</td>
<td>-0.378</td>
</tr>
<tr>
<td>Interdisciplinary Teaching</td>
<td>3.906</td>
<td>6.023</td>
<td>0.085</td>
<td>0.649</td>
</tr>
<tr>
<td>Block Scheduling</td>
<td>9.632</td>
<td>5.753</td>
<td>0.204</td>
<td>0.098</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall model: $R^2 = 0.093$, $F(7, 82) = 0.764$, $p = .619$
Standard Multiple Regression Analysis was also done using the Rigor and Relevance Processes construct variables as predictors of attendance at two year college at public alternative high schools for at-risk students. Table 38 shows the unstandardized regressions coefficient (B), standard error, standardized regression coefficient (B), and observed t values for all of the predictor variables. The overall fit of the Rigor and Relevance Process model was significant at the .05 level, $R^2 = 0.175$, $F (4, 85) = 3.270$, $p = 0.015$, allowing Rigor and Relevance Processes to explain 18% of the variance in the attendance at two-year colleges for graduates from public alternative high schools for at-risk students. In particular one of the four dichotomous predictor variables: opportunity for work based learning, had strong predictive ability for two year college attendance at the .05 confidence level, indicating that work-based learning or career and technical education (CTE), is an important variable in encouraging at-risk students’ attendance at two-year college. The other variables: admission requirements, summer school enrichment activities, opportunity to earn college credit, were not significant predictors for this outcome.

Table 38: Multiple Regression Predicting Attendance at Two Year College at Public Alternative High Schools for At-Risk Students from Rigor and Relevance Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>$B$</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission Requirements</td>
<td>-5.279</td>
<td>5.128</td>
<td>-0.102</td>
<td>-1.029</td>
</tr>
<tr>
<td>Summer school enrichment activities</td>
<td>-2.051</td>
<td>5.346</td>
<td>-0.045</td>
<td>-0.384</td>
</tr>
<tr>
<td>Opportunity for work based learning</td>
<td>13.042</td>
<td>5.048</td>
<td>0.291</td>
<td>2.583*</td>
</tr>
<tr>
<td>Opportunity to earn college credit</td>
<td>8.768</td>
<td>5.743</td>
<td>0.184</td>
<td>1.527</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001  Overall model: $R^2 = 0.175$, $F (4, 85) = 3.270$, $p = 0.015*$
The final construct that was analyzed for its predictive ability for the dependent variable of percent of graduates attending two year college at public alternative high schools for at-risk students, was the Student Support construct. Table 39 contains the unstandardized regressions coefficient (B), standard error, standardized regression coefficient (B), and observed t values for all of the predictor variables. Only one of the variables, student discipline program had a significant effect on percent of graduates attending two year colleges at public alternative high schools for at-risk students, and it was a negative effect, indicating that a school having a self contained discipline program could have a negative correlation with its students attending two year college. The overall fit of the model, however, was not significant, $R^2 = 0.150$, $F (4, 85) = 1.847$, $p = 0.127$, indicating that Student Support Processes as a whole are not as important in explaining the variance of this outcome.

Table 39: Multiple Regression Predicting Attendance at Two Year College at Public Alternative High Schools for At-Risk Students from Student Support Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>$B$</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Discipline Program</td>
<td>-14.480</td>
<td>6.137</td>
<td>-0.315</td>
<td>-2.359*</td>
</tr>
<tr>
<td>Health Care Program</td>
<td>12.573</td>
<td>8.206</td>
<td>0.227</td>
<td>1.532</td>
</tr>
<tr>
<td>Academic Assistance Program</td>
<td>-2.908</td>
<td>5.881</td>
<td>-0.062</td>
<td>-0.494</td>
</tr>
<tr>
<td>Summer School Assistance</td>
<td>-0.654</td>
<td>6.105</td>
<td>-0.013</td>
<td>-0.107</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall model: $R^2 = 0.150$, $F (4, 85) = 1.847$, $p = 0.127$

Research Question 2.4

Data Tables 40-44 contain the results of the analysis of Research Question 2.4:

What constructs predicted the effectiveness of alternative public high schools that serve at-risk students as measured by the schools' percentage of graduates that attended four
year colleges? Table 40 shows the results of the standard multiple regression analysis of the construct student characteristics which contains four continuous predictor/independent variables and attendance at four year college as the dependent continuous variable. The overall fit for the model was not significant, $R^2 = 0.083$ (4, 85) $= 0.843$, $p= 0.502$, and none of the student characteristic variables were significant predictors of attendance at four-year college. Table 40 contains the unstandardized regressions coefficient ($B$), standard error, standardized regression coefficient ($B$), and observed $t$ values for all of the predictor variables.

Table 40: Multiple Regression Predicting Attendance at Four Year College at Public Alternative High Schools for At-Risk Students from Student Characteristics

<table>
<thead>
<tr>
<th>Variable</th>
<th>$B$</th>
<th>SE</th>
<th>$\beta$</th>
<th>$t$ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of enrolled students with an IEP</td>
<td>-0.096</td>
<td>0.097</td>
<td>-0.159</td>
<td>-0.993</td>
</tr>
<tr>
<td>Percentage of enrolled students who are LEP</td>
<td>-0.712</td>
<td>0.387</td>
<td>-0.376</td>
<td>-1.839</td>
</tr>
<tr>
<td>Percentage of students in school of a racial/ethnic minority</td>
<td>0.085</td>
<td>0.089</td>
<td>0.182</td>
<td>0.955</td>
</tr>
<tr>
<td>Percentage of students approved for National School Lunch Program</td>
<td>0.056</td>
<td>0.090</td>
<td>0.095</td>
<td>0.624</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall model: $R^2 = 0.083$ (4, 85) $= 0.843$, $p= 0.502$

The next construct that was analyzed to answer Research Question 2.4 was School Structures. The standard multiple regression analysis revealed no significant ability of the School Structure variables to predict the dependent variable attendance at four year college at public alternative high schools for at-risk students, $R^2 = 0.127$, $F (5, 84) = 2.031$, $p = 0.082$. Table 41 contains the unstandardized regressions coefficient ($B$), standard error, standardized regression coefficient ($B$), and observed $t$ values for all of the predictor variables, only one of which had significant predictive ability for the school outcome attendance at four year college. A school calendar that exceeds the minimum,
mandatory number of school days was a significant negative predictor for a school's graduates attending at four year college at the .05 confidence level. This was a difficult finding to interpret given the limited information about what this variables means.

Table 41: Multiple Regression Predicting Attendance at Four Year College at Public Alternative High Schools for At-Risk Students from School Structures

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other than Large or Midsize</td>
<td>-4.695</td>
<td>4.251</td>
<td>-0.142</td>
<td>-1.104</td>
</tr>
<tr>
<td>Central City</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Calendar exceeds mandatory days</td>
<td>-6.735</td>
<td>2.552</td>
<td>-0.194</td>
<td>-2.639*</td>
</tr>
<tr>
<td>Has temporary buildings</td>
<td>-5.358</td>
<td>2.781</td>
<td>-0.169</td>
<td>-1.927</td>
</tr>
<tr>
<td>School day in hours</td>
<td>-2.133</td>
<td>1.853</td>
<td>-0.161</td>
<td>-1.151</td>
</tr>
<tr>
<td>Enrollment</td>
<td>0.022</td>
<td>0.018</td>
<td>-0.161</td>
<td>-1.151</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall model: $R^2 = 0.127$, $F (5, 84) = 2.031$, $p = 0.082$.

The next construct that was analyzed to answer Research Question 2.4 was Classroom Processes. The standard multiple regression analysis, using the seven classroom variables as predictor variables, and attendance at four year college as the continuous dependent variable, revealed an overall fit for the model of, $R^2 = 0.074$, $F (7, 82) = 0.647$, $p = .716$, which was not significant. None of the predictor variables had any significant ability to predict percentage of graduates that attend four year college at public alternative high schools for at-risk students. Table 42 contains the unstandardized regressions coefficient (B), standard error, standardized regression coefficient (B), and observed t values for all of the predictor variables,
Table 42: Multiple Regression Predicting Attendance at Four Year College at Public Alternative High Schools for At-Risk Students from Classroom Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated number of students per FTE teacher in the school</td>
<td>-0.133</td>
<td>0.345</td>
<td>-0.073</td>
<td>-0.384</td>
</tr>
<tr>
<td>Instructional Approach (self-paced, open or ungraded classrooms)</td>
<td>-5.247</td>
<td>4.283</td>
<td>-0.153</td>
<td>-1.225</td>
</tr>
<tr>
<td>Traditional grades</td>
<td>-0.979</td>
<td>3.640</td>
<td>-0.028</td>
<td>-0.269</td>
</tr>
<tr>
<td>Keep the same teacher</td>
<td>6.221</td>
<td>6.469</td>
<td>0.185</td>
<td>0.962</td>
</tr>
<tr>
<td>Team teaching</td>
<td>0.394</td>
<td>5.197</td>
<td>0.012</td>
<td>0.076</td>
</tr>
<tr>
<td>Interdisciplinary Teaching</td>
<td>-4.717</td>
<td>2.825</td>
<td>-0.150</td>
<td>-1.670</td>
</tr>
<tr>
<td>Block Scheduling</td>
<td>2.427</td>
<td>4.460</td>
<td>0.075</td>
<td>0.544</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001 Overall model: R^2 = 0.074, F (7, 82) = 0.647, p = .716

Standard multiple regression analysis was also done using the Rigor and Relevance Processes construct variables as predictors of a schools’ percentage of graduates that attend four year college. Table 43 shows unstandardized regression coefficient (B), standard error, standardized regression coefficient (B), and observed t values for all of the predictor variables. The overall fit of the Rigor and Relevance Process model was not significant, R^2 = 0.029, F (4, 85) = 0.613, p = 0.654, and none of the four predictor variables were significant predictors for percentage of graduates that attend four year college at public alternative high schools for at-risk students.
Table 43: Multiple Regression Predicting Attendance at Four Year College at Public Alternative High Schools for At-Risk Students from Rigor and Relevance Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Admission Requirements</td>
<td>3.508</td>
<td>3.360</td>
<td>0.099</td>
<td>1.022</td>
</tr>
<tr>
<td>Summer school enrichment activities</td>
<td>3.151</td>
<td>4.037</td>
<td>0.100</td>
<td>0.780</td>
</tr>
<tr>
<td>Opportunity for work based learning</td>
<td>2.947</td>
<td>4.057</td>
<td>0.128</td>
<td>0.726</td>
</tr>
<tr>
<td>Opportunity to earn college credit</td>
<td>-5.411</td>
<td>3.882</td>
<td>-0.165</td>
<td>-1.394</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001  Overall model: R² = 0.029, F (4, 85) = 0.613, p = 0.654

The final construct that was analyzed for its predictive ability for the dependent variable of percent of graduates attending four year college at public alternative high schools for at-risk students, was the Student Support construct. Table 44 contains the unstandardized regressions coefficient (B), standard error, standardized regression coefficient (B), and observed t values for all of the predictor variables. None of the dichotomous variables, student discipline program, health care program, academic assistance program, and summer school assistance had a significant effect on percent of graduates attending four-year colleges at public alternative high schools for at-risk students. The overall fit of the model was not significant, R² = 0.076, F (4, 85) = 1.409, p = 0.238, indicating that Student Support Processes are not an important part of the variance of this dependent variable.
Table 44: Multiple Regression Predicting Attendance at Four Year College at Public Alternative High Schools for At-Risk Students from Student Support Processes

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>B</th>
<th>t value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Discipline Program</td>
<td>-5.893</td>
<td>3.224</td>
<td>-0.187</td>
<td>-1.828</td>
</tr>
<tr>
<td>Health Care Program</td>
<td>-3.565</td>
<td>2.014</td>
<td>-0.094</td>
<td>-1.770</td>
</tr>
<tr>
<td>Academic Assistance Program</td>
<td>-2.757</td>
<td>2.208</td>
<td>-0.085</td>
<td>-1.249</td>
</tr>
<tr>
<td>Summer School Assistance</td>
<td>-3.963</td>
<td>3.984</td>
<td>-0.110</td>
<td>-0.995</td>
</tr>
</tbody>
</table>

*p<.05, **p<.01, ***p<.001  Overall model:  \( R^2 = 0.076, F (4, 85) = 1.409, p = 0.238 \)

Summary

Using descriptive statistics, logistic regression analysis and multiple regression analysis of the 2003-2004 School and Staffing Survey Public School Data File (NCES, 2007), this study chapter produced many significant findings that add to the understanding of public alternative schools. Chapter V discusses these findings in detail.
CHAPTER V

DISCUSSION, LIMITATIONS, AND RECOMMENDATIONS

The purpose of this study was to add to the small body of quantitative research on public alternative education in the United States by using an effective schools conceptual framework to examine the data from a nationally representative sample of public alternative high schools. The study determined which variables or groups of variables could be used to define public alternative high schools as a school type, and which variables of groups of variables could be used as predictors of effectiveness, or increased outcomes, at these schools. The study answered two research questions: 1) Could the constructs of inputs, structures, school processes and outcomes be used to define public alternative high schools, and if so, what were the statistically significant predictors of school type? and 2) Did the constructs of school inputs, structures and processes predict outcomes of public alternative high schools for at-risk students? If so, what were the statistically significant predictors?

In this chapter, the significant and nonsignificant findings of the study are discussed in relation to the relevant theories and research in the literature. Limitations of the study will also be pointed out, as will ideas to further this area of research. Finally, this chapter includes recommendations, based on the findings of the study, that might aid policy makers and practitioners interested in alternative education.
Basic Information about Public Alternative Schools

The results of this study revealed some interesting information that added to the body of knowledge about alternative schools. The Schools and Staffing Survey conducted by the Institute for Educational Sciences and the National Center for Education Statistics had a very powerful group of instruments used to gather information from public and private schools, school districts, principals, and teachers around the country, on a regular basis. One of the five main policy issues addressed by the survey was school programs and policies. Using the resources of the federal government, the SASS survey team, which included the United States Census Bureau, was able to achieve a weighted response rate for their 2003-3004 Public School Survey of 80.2% from a sample size of 10,202, which estimated the population of all public schools in this country at 88,100. In this study, the analysis of the data estimated that 6.2% or 5,400 of those schools classified themselves as alternative schools. This number was substantially different from the estimate of 10,900 alternative schools or programs created by the Fast Response Survey System (FRSS) Survey of Public Alternative Education which was the most comprehensive study of alternative education done to date (Kleiner, Porch, & Harris, 2002). The Survey of Public Alternative Education was a nationally representative survey of the alternative high schools and programs conducted by the National Center for Educational Statistics in 2001 using the FRSS Survey System which was designed to minimize the time burden on survey participants. One possible explanation for the difference between the FRSS study was that the FRSS Survey included all alternative
programs that existed inside of a school district, and not just those that were classified as a public school.

The results of this research study estimated 28% of the total public school population had grades 9-12, and 19% of those schools (4,700) self classified as alternative schools. This, too, was substantially different from the estimate of 1,390 provided in 1999, by The National Alternative High School Youth Risk Behavior Survey. (Grunbaum, et al., 1999) This difference could be explained by the growth in the number of alternative high schools in the years between 1999 and 2003, or some unidentified difference in the way these values were estimated. Of schools with grades 9-12 that specifically serve at risk populations, this study estimated that 87% classified themselves as alternative schools.

The rest of the descriptive statistics for all of the variables analyzed for both Regular and Alternative Public Schools with grades 9-12 are listed in Tables 12, 14, 16, 18, 22, and 24 of Chapter IV.

Defining Public Alternative High Schools

The analysis of Research Question 1 (Could the constructs of inputs, school structures, school processes and outcomes define public alternative high schools, and if so, what are the statistically significant predictors of this school type?) produced many significant findings. The results showed that public alternative high schools differed from regular high schools in many ways, some of which supported the qualitative descriptions of alternative high schools found in the literature, and others that disagreed with those descriptions. In addition, this study supported as well as extended the quantitative data in
the literature related to alternative schools. Because the qualitative literature was
generally so vague about defining alternative high schools, and the other quantitative
studies that have been done assessed different characteristics of the schools, this study
made a significant contribution by quantitatively characterizing alternative public high
schools in this country.

Student Characteristics

This study supported the findings of the FRSS Survey of the alternative
high schools and programs regarding student characteristics (Kleiner, Porch, &
Harris, 2002). The FRSS Survey found that districts with high minority
populations and districts with high poverty concentrations were more likely to
have alternative schools or programs for at-risk students. This study also found
that the variables that measured percentage of students of racial or ethnic
minorities, and percentage of students in poverty (qualifying for the NSLP) were
significant predictors for the school type, alternative public high school. The
percentage of student approved for NSLP, especially was a very important
predictor, with a standardized beta coefficient of .36 as part of the student
characteristic construct, showing that poverty was the most predictive
characteristic of students that attended alternative public high schools. The FRSS
Survey found no significant difference in the number of special education
students in alternative schools compared to other schools, and this study
concurred with that finding: there was no significant difference in percentage of
students who had an IEP in regular and alternative public high schools. Most of
the variables used to characterize school in the SASS Public School Survey,
however, were different from those used in the FRSS Alternative School Survey, so they cannot be compared. In this way, this study added valuable quantitative data to these program characterizations.

School Structures

This study also added support to many of qualitative descriptions of alternative schools found in the literature. The literature described alternative schools as small schools, for at-risk students, and this study supported those descriptions: both the variables for enrollment and for at-risk students were significant predictors for the school type, alternative public high school. Alternative schools were also shown in the literature to be more flexible in their school day and their school year, and this study lent quantitative support for that: both the variables for a shorter school day, and a longer school year showed significant ability to predict alternative high schools compared to regular high schools, although extended school year (beyond the required days) did not. The FRSS Survey of alternative schools found they were more likely to be from large, urban school districts, and this study supported that: urbanicity (large or midsize central city) was a significant predictor for the school type, alternative public high school. This study did not help shed light on all of the different forms that alternative school programs can take, from being a subpart of a regular school, to being in a juvenile detention facility, to being in their own buildings, but it did show that alternative high schools were no more likely than regular high schools to have temporary buildings, or be charter schools.
Classroom Processes

The curriculum and classroom characteristics of alternative schools were also discussed in the literature. The literature on alternative schools talked a lot about the affective aspects of alternative schools: positive relationships between teachers and students, student peer groups, and a family atmosphere (Kellemayer, 1998, McDonald, 2002, Kerka, 2003), as well as the philosophy of the school whether it is humanistic, punitive, or remedial (Raywid, 1994). This study did not add to that body of knowledge directly, but it did help build some understanding of whether classroom processes in alternative public high school are significantly differently from regular public high schools. Together the variables of the classroom processes construct did show significant predictive ability for the school type, alternative public high school, although the logistic regression model had an $R^2$ of only .15. The use of the instructional approach (self-paced, open or ungraded classrooms), not having traditional grades, and team teaching were the strongest predictor variables. The FRSS Survey also found that a high number of alternative schools used self paced instruction, which agrees with the findings of this study.

Most of the literature described alternative schools as having small class sizes. In this study, the number of students per FTE teacher was not a significant predictor of alternative public high schools. It is possible that the average teacher student ratio at regular schools was somewhat misrepresented because it took into account all special classes, including special education pull-out classes and
advanced placement classes, nevertheless the average ratio was not significantly different between the two types of schools. Similarly, interdisciplinary teaching was not a significant predictor, even though it was frequently mentioned in the literature as one of the strategies of effective alternative schools. Clearly, classroom processes were part of what defined alternative public high schools, and make them different from regular public high schools, but not to a great extent.

**Rigor and Relevance Processes**

A good deal of attention was being paid in the most recent literature on the importance of having a rigorous and relevant curriculum as a means to improve our schools as well as decrease dropout rate. (Americaspromise.org, 2008, Lee & Burkham, 2001) Career and Technical Education, too, was gaining strength as an important strategy to motivate at-risk students (Stone, 2004; Elliott, 2002; Conchas, 2002), as was the use of technology in the classroom (Kellmayer, 1998, Smink & Reimer, 2005). The results of this study did not indicate that these dropout prevention strategies were being followed to a large degree at alternative public high schools.

Six variables were chosen that indicated a rigorous and relevant curriculum: admission requirements, talented and gifted program, summer school enrichment activities, students have access to the internet, opportunity for work based learning, and opportunity to earn college credit. This block of six variables did predict the school type: alternative public high school, with an $R^2$ value of .36 and $p<.001$. Alternative public high schools were much more likely than regular
public high schools to have admission requirements, and summer school
enrichment programs, but much less likely to have talented and gifted
programming, or for their students to have easy access to the internet. Neither the
opportunity for work based learning, nor the opportunity to earn college credit
were significant predictors of school type. These results indicated that there are
distinct differences in these curricular processes between regular and alternative
public high schools, and that some of curricular processes that indicate rigor and
relevance are taking place in alternative public high schools, but many of the
desired strategies for rigor and relevance were not found in alternative public high
schools. Processes that are most well supported in the literature: work-based
learning, and access to the Internet, were neither significant positive predictors,
nor significant negative predictors.

It is important to note, that in this study, some limitations were put on defining a
rigorous and relevant curriculum, because many of the questions related to curriculum on
the SASS survey were asked at the school district level. The researcher could not be sure
that the curriculum or graduation requirements would be the same at the alternative
school as the regular school in a school district, so those variables were not used. In
addition, in the Public School Data, there was not enough detail to analyze any variables
related to technology or on-line learning, and the variable related to career academies had
too small of a sample answering “yes” to include in the analysis.

Student Support Processes

A commonly understood characteristic of alternative schools in the literature was
that they provide increased support, both academically and socially for struggling
students. They are thought to link to multiple community agencies (Lange & Slatten, 2002), and have many built-in supportive systems. This study does not support that characterization of alternative public high schools. The construct of Student Support Processes was built from four types of programs that could be present in the schools: discipline program, health care, academic assistance, and summer school assistance. Together these four variables do not predict school type. According to this analysis, these programs do not take place in alternative public high schools with any more statistically significant frequency than they do in regular public high schools.

Outcomes

Although this was an area, undoubtedly, that alternative public high schools would wish not to have a significantly different characterization from regular public high schools; this construct provided the next greatest predictive ability between the school types after school characteristics, having a $R^2$ value of 0.374. All of the outcomes, percentage of students graduated last year, percentage of graduates attending a 4-year college, and average daily attendance, were significantly negatively correlated with alternative public high schools, except attendance at a 2-year college. This indicated that while most alternative public high schools were designed to help at-risk students improve attendance at school, graduate and move on to higher education, on average they had much less successful outcomes than regular public high schools, even with all of their differences in structures and processes, as well as the affective attributes highlighted in the qualitative literature. This was really not surprising given that all of the behaviors and circumstances that put the students at-risk of school failure, and led them to an alternative high school in the first place, still challenged them. It shows that for these
types of deeply seeded social issues, there were no easy answers, only best practices that could create the best outcomes for the most students with the limited time and resources of the public schools.

Again, some limitations exist in data used to do the analysis: All of the outcome data was self-reported instead of coming from a state audited data base so it could have had differences in the way it was measured. For example the number of days of absence that students were allowed before they are dropped off of the attendance roster could vary from state to state and school to school. This would have changed the calculation for average daily attendance. Also, graduation rate was calculated by dividing the number of graduates with a diploma and by the number of 12th graders from the last year, which is no longer viewed as the recommended way to calculate graduation rate (NGA, 2005). In addition, this data set gave no information about the number of students who earned a GED, which would be an outcome measure for some alternative high schools programs.

**Best Fit Model**

In order to better define public alternative high schools, an overarching model that would explain a large percentage of the variance between alternative public high schools and regular public high schools was produced. The model included the most significant variables from all of the different constructs: percentage of students approved for NSLP, urbanicity, enrollment, hours in the schools day, for students at risk, instructional approach, admissions requirements, percentage graduated last year, and percentage to four year colleges, average daily attendance. The logistic regression analysis showed a highly significant fit for the model, $R^2 = 0.670$, Wald (10, 79) = 27.529, $p < .001$. Overall the model could be used to predict two thirds of the variance associated with the
dependent variable school type. In summary, public alternative high schools could be defined as schools that were likely to have more students approved for NSLP, were found in a large or midsize central city, had small enrollment, had fewer hours in the school day, were specifically for students at-risk, used the instructional approach, had admissions requirements, had lower average daily attendance, had a lower percentage of students who graduated last year, as well as a lower percentage of graduates who went to a four year college, compared to regular public high schools.

Effective Alternative Public High Schools for At-Risk Students

What constituted an effective school, especially one whose mission was working with students at risk of dropping out, could be measured in many different ways (Lehr, 2004). Attempting to narrow in on specific aspects of the schooling that improved the outcomes was even more complex. Nevertheless, this research study added some interesting quantitative findings to the study of the effectiveness of a very unique and diverse body of schools, alternative public high schools. The analysis of Research Questions 2 (Do the constructs of school inputs, structures and processes predict outcomes of public alternative high schools for at-risk students? If so, what are the statistically significant predictors?) showed several ways in which school structures and processes made a difference in school outcomes. As shown in the analysis of Research Question 1, overall, the outcomes for alternative public high schools were much lower than for regular public high schools, but within that subset of alternative public high schools, some structures and processes did make a difference.
Inputs

One of the most interesting findings of this study was that school inputs (student demographic characteristics) were not a significant predictor for any of the outcome measure. Whether schools had higher percentages of students that were racial or ethnic minorities, with an IEP, LEP, or who qualified for the NSLP, had no significant relationship with higher or lower graduation rates, average daily attendance, graduates' attendance at 2-year colleges, or graduates’ attendance at 4-year colleges at public alternative high schools for at-risk students. This supports previous research that showed that student demographics, alone, although considered to be a risk factor, do not necessarily predict who will stay in school (Jerald, 2006). This finding also supported the notion that students who are successful at alternative public high schools cannot easily be categorized, and contradicted the deficit theory of school dropout (St. Germaine, 1995) in which individuals from certain backgrounds fail at school. Even though this study showed in the analysis of Research Question 1 that the school type, alternative public school, was significantly predicted by an increased number of students from poverty, and of racial and ethnic minority, these variables did not predict which alternative public high schools would have an increased graduation rate, or any other outcome. This study gave excellent quantitative evidence to dispel the notion that only certain subgroups of students brought down the outcomes of alternative public high schools.

One possible explanation for these results was found in the alternative school literature. One of the key effective practices of alternative schools was treating students with respect (Kellemayer, 1998, McDonald, 2002, Kerka, 2003). The findings of this study supported that concept in that the outcomes of the school were not predicted by
"categories" of students, but by individual students. Students may have come from
different racial and ethnic backgrounds, been from poverty, had different issues related to
learning and school, been participating in high risk behaviors, or been involved with the
judicial system (Croninger & Lee, 2001, Bickford, 2001, Grunbaum, et. al), and their
success at alternative public high schools could not be linked to their "category".
Clearly, the causal relationships behind this finding need to be further explored with
quantitative data that includes attitudes and perceptions from teachers and students
(something this researcher hopes to pursue in the future), but the findings of this study
gave a good basis from which to start, and are especially powerful because they come
from such a large, nationally representative sample.

Structures

Another interesting finding was that among alternative public high schools,
school structures had no predictive ability for school outcomes. Whether a school was
from a large city, had a small enrollment, had a longer school day or school year, or had
no temporary buildings had no significant relationship with graduation rate, average daily
attendance, graduates’ attendance at two year colleges, or graduates’ attendance at four
year colleges at public alternative high schools for at-risk students. This does not concur
with the ideas in the literature that link smaller school size with increased outcomes
(Hylden, 2005), but because the average enrollment at public alternative high schools (M
= 128) was already much smaller than the average enrollment at regular public high
schools (M =813), - much below the optimal school size recognized by Lee and Smith in
1997, it is not surprising that school size was not relevant in this analysis. This data also
disagreed with literature that recommends extended school days and school years as a
way to improve the academic success for students (Meehan, Cowley, Chadwick, Schumacher, & Hauser, 2004). Although comprehensive, the referenced study was not done specifically with at-risk students, so it made sense that results could be different in this study.

Outcomes

Graduation Rate

Another important finding of this study was that the only construct that had significant predictive ability for increased graduation rate was the Classroom Processes construct. This construct included the variables of instructional approach (programs with special instructional approaches, e.g. Montessori, self-paced instruction, open education, ungraded classrooms, etc.), students per FTE teacher, keep the same teacher (student groups that remained two or more years with the same teacher), traditional grades, interdisciplinary teaching (two or more teachers with different academic specializations collaborate that taught an interdisciplinary program to the same group of students), team teaching (two or more teachers, in the same class, at the same time, were jointly responsible for teaching a single group of students), and block scheduling (class periods scheduled to create extended blocks of instruction time) As was previously found in many different studies, this study found that it was what happened in the classroom, between the teacher and the student that mattered most in student success. This study did not have the ability to dissect classroom processes in fine detail, nor could it make assumptions that classroom processes caused increased graduation rate, but it did show that classroom processes were highly significant predictors of increased graduation rate at public alternative high schools for at risk students - explaining 34% of the variance in
that outcome. In particular students having the same teacher for multiple years, using interdisciplinary teaching, and using block scheduling were positively correlated with graduation rate at the .05 confidence level. The findings about interdisciplinary teaching and block scheduling made sense in terms of what is known about the intent of block scheduling. If teachers used the block schedule to change the way they teach, and do more interdisciplinary and project based teaching, it did have an effect on student outcomes (Zepeda & Mayers, 2006).

Interestingly, using the instructional approach (self-paced, open or ungraded classrooms) was negatively correlated with increased graduation rate. This finding supports the ideas found in the literature, that showed that self-paced work was not recommended for learners that were easily distracted (Harrell, 1996), although it contradicted the notion that students can gain success by using self-paced computer instruction (Quinn, 2002). Because the variables in this study did not give detailed information about the type of activities taking place while using the instructional approach, this finding could use more investigation, especially because this data came from the 2003-2004 school year and the use of technology to deliver self-paced instruction may not have been highly prevalent in these schools. When put together with the idea that keeping the same teacher from year to year was a statistically significant predictor, however, it suggests that it was partly the teacher-student interaction, or lack of it, in the case of the instructional approach, that created the predictive ability of this construct.

The fact that keeping the same teacher from year to year was a significant predictive variable for graduation rate also lends support to the key practice at effective
alternative schools of creating a family atmosphere. A teacher that a student knew for multiple years would start to feel like family, and could create both a high level of expectation and a high level of support for a student. It was also important to note that class size or student per FTE teacher in the school was not a significant predictor for any of the outcomes. Evidently, it is not the number of students per teacher in the class, but what goes on in the classroom that is more correlated to graduation rate. Again, this construct could be flushed out much more in a further study, using teacher or student survey data to explore the student-teacher interactions, but it gave excellent quantitative evidence to lead principals and other policy makers toward putting classroom procedures as an area of emphasis. If they have to make key decisions about how to change their programs and processes, or how to spend their energies and resources, the classroom would be the most important place to start.

Average Daily Attendance

Another important finding of this study related the construct of Student Support with the outcome average daily attendance. One of the comments often heard by teachers involved in alternative education is “I can’t help them learn if they aren’t in school.” Attendance issues plague at-risk students, some caused by bad habits, some caused by unfortunate circumstances. In this study it was discovered that the only construct that had significant predictive ability at the .05 significance level ($R^2 = 0.128$) to increase average daily attendance was the Student Support construct that included the variables of student discipline program, health care program, academic assistance program, and summer school assistance program. Unfortunately, as found in the analysis of Research Questions 1, this was the one construct that was not a significant predictor of alternative
public high schools, which could help explain some of the variance in this outcome in these schools. These programs, especially the health care program, which explained the majority of the variance (standardized beta = .249), was the only one positively correlated with average daily attendance, should be important considerations for anyone involved with planning or running an alternative public high school. Although, this study, was not conducted with an experimental design, and could not assume a cause-and-effect relationship between these variables, it certainly lent quantitative evidence, from a large scale nationally representative study that supported other experimental findings connecting health care and truancy prevention (DeSocia, et. al., 2007) and it concurred with the research showing the importance of having on-site health care clinics in school settings (Levy, 1987), and the connection between school absenteeism and physical and mental health issues. If providing health care programs beyond just having a school nurse, what the literature refers to as comprehensive health care, can predict increased average daily attendance, and help get at-risk students to school more frequently, then it should be an important resource consideration for alternative schools, because increasing average daily attendance, and decreasing truancy, will have the added benefit of increasing other school outcomes as well. As teachers, and researchers know all too well, students that miss a great deal of school are the most at-risk of school failure, and attendance problems are usually a precursor to dropping out (Smink & Reimer, 2005).

Two Year College Attendance

The last important finding of this study connected the construct of Rigorous and Relevance Processes with increased attendance of graduates at 2-year colleges. The construct of Rigorous and Relevant Processes included the four dichotomous variables
admission requirements (special requirements for admission other than proof of immunization, age, or residence), summer school enrichment activities (summer school activities or academic intercessions provided for students enrolled in this school who sought academic advancement or enrichment), opportunity to earn college credit (college credits offered through community colleges, colleges, or distance learning providers) and opportunity for work based learning (work-based learning or internships, in which students earn course credits for supervised learning activities that occur in paid or unpaid workplace assignments). The overall fit of the Rigor and Relevance Process model was significant at the .05 level, \( R^2 = 0.175, F (4, 85) = 3.270, p = 0.015, \) allowing Rigor and Relevance Processes to explain 18% of the variance in the outcome measure of attendance at two-year colleges for graduates from public alternative high schools for at-risk students. In particular the opportunity for work based learning had strong predictive ability for two-year college attendance at the .05 confidence level with a standardized beta coefficient of .29. This finding supported the growing body of research that links high school career and technical education with increased school success, especially for at-risk students (Conchas, 2002; Kemple, 2004; Stone, 2004; Elliott, Hanser, & Gilroy, 2002). This finding, too, becomes and important consideration for policy makers at public alternative high schools. Although, the causal link, needs further experimental investigation, work based learning opportunities could be an important program to initiate or expand in schools seeking to improve the percentage of their students who attend two year colleges.

*Four Year College Attendance*
The variables of inputs, structures, or processes did not appear to predict the outcome measure of attending four-year college for public alternative high school graduates. Perhaps because the number of student that attended four year colleges who graduated from alternative high schools was so low (M=8.7%) compared to regular public high schools (M=41.7%), that no patterns emerged from the data.

_Different Predictors for Multiple Outcomes_

No construct predicted increases in more than one outcome for Public Alternative High Schools for at-risk students, lending support to the differentiated perspective of school effectiveness which states that all outcome measures are not improved by the same school processes (Rumberger & Palardy, 2005). For example, in this study, the processes that predicted increased average daily attendance were not the same processes that predicted increased attendance at two year colleges.

_Summary of Important Findings_

This study contained several important findings that contributed to the understanding of public alternative high schools. In answer to Research Question 1: Can the constructs of inputs, structures, school processes and outcomes be used to define public alternative high schools, and if so, what are the statistically significant predictors of this school type? The answer was affirmative, the inputs (student demographics), outcomes, school structures, classroom structures and processes, as well as rigor and relevant curriculum processes were all significant predictors of the school type public alternative high school or regular public high school, although the students support processes were not. An overall model, containing ten variables was created that
explained 67% of the variance between the two school types, and could be used as a quantitative definition of Public Alternative High Schools.

In answer to Research Question 2: Do the constructs of school inputs, structures and processes predict outcomes of public alternative high schools for at-risk students? If so, what are the statistically significant predictors? The answer was also affirmative; some processes were significantly associated with improved outcomes for students at public alternative high schools for at-risk students. Neither input (student demographics) nor school structures were predictors for any outcomes. Classroom Processes predicted 34% of the variance in graduation rate. Student Support Processes, especially health care, predict 13% of the variance in average daily attendance, and Rigor and Relevance Processes, especially work-based learning opportunities, predict 18% of the variance in graduates' attendance at two-year college. However, no processes predicted increases in more than one outcome.

Limitations

The main limitation to this study was that it could not create a causal relationship between any of the variables and the outcomes because it did not have an experimental design. In the absence of experimentally designed studies, however, which are very difficult to create in schools (especially ones with large, random samples) a large scale survey such as this offers the next best evidence of effective practices in schools, and can lead researchers in directions that demand further study (Schneider, et. al., 2007).

Another limitation of this study was that it used only survey data. One of the limitations of survey studies is that all of the findings are limited by the way
the survey questions were written, and the way they were interpreted by the participant. Even with very careful definitions written in the questions, there is still some room for interpretation by an individual school participant. In addition, the SASS survey data provided a snap-shot of a moment in time, in this case the school year 2003-2004, and these schools may have changed since then. The findings related to the use of technology, especially, could have been out of date, as this study examined them in 2009. Still it takes a great deal of time to gather and process this amount of data, and this study used the most up-to-date SASS data available.

Another design limitation of this study was that it used only school level data from the SASS surveys, making many principal, and school district variables that might have added additional information, unavailable. Similarly, the teacher-level data that might have added more insight into what was happening in classrooms was not used in this study, nor was there any individual student level data available, which would have given even finer detail as to how all of the various variables interacted.

Finally, this study gave a big picture of alternative public high schools, but it left the reader and the researcher wanting to know more. Nearly all of the findings could be investigated in more depth in a further study, something this researcher hopes to do in the future. On the other hand, the big picture view could be very valuable to policy makers when they are trying to make decisions that affect large numbers or whole groups of schools.
Recommendations

Policy makers should use the results of this study to have a better understanding of what inputs, structures, processes and outcomes define alternative public high schools as different from regular public high schools. This knowledge could be used to aid in policy makers' decision making in many areas. For example, should all school types be held to the same standards of adequate yearly progress for the No Child Left Behind Act? Is funding alternative public high schools a good use of tax payer dollars based on the schools' outcomes? Should alternative public high schools receive additional at-risk funding based on their student characteristics?

In addition, the policy makers, principals and teacher-leaders that are in charge of the development and improvement of Alternative Public High Schools, could gain insight from the findings of this study. They should know that student demographics did not have any predictive ability for outcome measures at public alternative high schools, so they should keep in mind that no correlation, and especially no causation, between student demographics and school outcomes exists. Similarly they should know that school structures did not predict any outcomes at these schools. Whether a school had temporary buildings, an extended school day or school year, had a large enrollment or not, did not have any predictive ability for school outcome measures.

There were three areas, however, based on this study, that school leaders should be aware, did predict better schools outcomes. They were a) classroom processes, especially having students work with the same teacher for multiple years, doing interdisciplinary teaching in a block scheduling arrangement, and limiting self-paced instruction; b) adding on-site, comprehensive health care to help deal with the multitude
of health and behavioral issues that at-risk students face, and c) building work-based learning opportunities that connect students with the world beyond high school.

It is especially important to note that the variables that were predictive of increased outcomes were not part of the defining variables of alternative schools. In other words, many of the variables that correlate with the highest outcomes for at-risk students are not found to a significantly greater extent in alternative public high schools, compared to regular public high schools. This helps point out that there is much work to be done in the research and practice of alternative education. Researchers and practitioners need to continue to gather high quality, experimental evidence of what is happening, and what is working effectively in today’s alternative high schools. This study could be used as a framework from which to build this understanding.

The results of this study led to several recommendations for all policy makers, principals, teachers, parents, and community members involved in the huge challenge that this country faces in trying to decrease the number of students that dropout of high school. In today’s knowledge based economy, a student that does not graduate with a high school diploma has life-long earning potential much lower than one with a high school diploma. Our children cannot afford to drop out, nor can society afford to let them. Students who are at-risk of failing in regular schools deserve to have options, and alternative public high schools are noted in the literature as an important dropout prevention “alternative” for these students (Smink & Reimer, 2005; Americaspromise.org, 2008; National Education Association.org, 2008). Because alternative public high schools serve the most disengaged, and voiceless members of society, they have not frequently been the subject of evaluation studies. This study has
added generalizable, quantitative information to the body of literature about alternative schools, to help change that, and to encourage others to look closely at their structures and processes, to help make alternative schools much more than a “dumping ground” for those students who do not fit in traditional schools.
APPENDIX

Human Subjects Institutional Review Board Approval
Date: March 18, 2009

To: Jianping Shen, Principal Investigator
    Lisa Ryan, Student Investigator for dissertation

From: Amy Naugle, Ph.D., Chair

Re: HSIRB Project Number: 09-03-17

This letter will serve as confirmation that your research project entitled “Public Alternative High Schools: The Inputs and Processes of Effective Schools” has been approved under the exempt category of review by the Human Subjects Institutional Review Board. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the application.

Please note that you may only conduct this research exactly in the form it was approved. You must seek specific board approval for any changes in this project. You must also seek reapproval if the project extends beyond the termination date noted below. In addition if there are any unanticipated adverse reactions or unanticipated events associated with the conduct of this research, you should immediately suspend the project and contact the Chair of the HSIRB for consultation.

The Board wishes you success in the pursuit of your research goals.

Approval Termination: March 18, 2010
BIBLIOGRAPHY


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